

# Transport, Access, Parking and Servicing Planning Scheme Policy

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The following guidelines are referred to in the **Transport, Access, Parking and Servicing Code**:

- Transport/Land Use Reports and Definitions
- Design Vehicle Guidelines
- Site Access Design Guidelines
- Servicing Layout Design Guidelines
- Carparking Spaces Guidelines
- Carpark Layout Design Guidelines
- Design Vehicles and Vehicle Turning Templates

## 1 Transport/land use reports and definitions

### 1.1 Transport/land use report guidelines

For most development applications, it will be sufficient that the design complies with the requirements of these and other relevant guidelines. Applications for major developments, capable of having significant impact on the external transport systems or the adjacent community, should be accompanied by a report addressing the transport impacts of the proposal normally prepared by a qualified person.

A transport/land use report should address the following issues:

- specific measures to ensure the proposal will contribute towards encouraging walking, cycling and greater use of public transport in preference to using private cars
- the need to improve public transport services and infrastructure as a result of the development
- measures to ensure maximum accessibility to public transport, including future expanded services
- a review of the existing and proposed traffic network and traffic operating conditions based on an appropriate planning horizon (with a minimum of 10 years)
- the amount of other traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect of traffic on the movement of other traffic on the road system. This includes the impact of generated traffic on:

- key nearby intersections
- local streets in the neighbourhood of the development
- the environment
- existing nearby major traffic generating development
- the major road network
- existing parking supply and demand in the vicinity of the proposed development
- level of provision for parking in the development based on land use and public transport provision
- whether the proposed means of ingress to or egress from the site of the development are adequate and located appropriately according to the City’s Road Hierarchy
- adequate provision to be made for the loading, unloading, manoeuvring and parking of vehicles within that development or on that land
- movements of freight carrying vehicles associated with the proposal and how these are to be minimised
- the possibility of integration with adjacent development
- the effects on public transport, traffic operations and parking, of any temporary works required during construction
- any comments made by either Queensland Transport or the Department of Main Roads that comply with the rights and powers of these departments. They must be consulted on development adjacent or close to State controlled roads
- the existing and likely future amenity of the surrounding area
- a statement of all of the assumptions made in the preparation of the report and the design parameters adopted in the technical analysis.

Land uses expected to lead to higher levels of public transport usage, if located on a public transport route, include but are not limited to:

- airline stations
- backpackers hostels
- large business premises including office parks
- coach stations
- educational establishments particularly schools
- hospitals
- hotels
- major indoor and outdoor sport and recreation facilities
- higher density residential

- restaurants
- retirement villages
- shopping centres
- sport and convention centres.

## 1.2 Definitions

For the purposes of this Planning Scheme Policy the following definitions apply, some which are shown in Figure a.

**Access driveway:** the footpath crossing that provides access to a site and on which vehicles move between the external frontage road and the site boundary and vice versa.

**Circulation aisle:** an aisle performing the dual function of providing access to carparking spaces and providing access to other aisles.

**Circulation road:** a roadway contained within a development site, which does not provide direct access to parking spaces, but distributes traffic between entrance/exit driveways, circulation/parking aisles, and service areas.

**Design vehicle:** the vehicle for which a given development is to make on-site provision as described in this Planning Scheme Policy.

**Development:** the use of land or structure, for one or more of the purposes listed in this Planning Scheme Policy, for which definitions are contained in the City Plan.

**Driveway:** see Access driveway

**Frontage road:** the road fronting a development from which access is gained via a driveway. Some developments will have more than one frontage road.

**Loading dock:** the area for loading and unloading of vehicles generally incorporating a raised platform to facilitate operations. Loading and unloading can, however, take place from ground level.

**Manoeuvring area:** the part of a service area, adjacent to service bays, required by service vehicles to manoeuvre into the bays or to a position beside a loading dock.

**Parking aisle:** a carpark aisle used by cars to gain access to a parking space.

**Queuing area:** an area of roadway between the entry or exit driveway and the first conflict point or traffic control point within a carparking area, available for the storage of vehicles in a queue.

**Service aisle:** that portion of roadway between the access driveway and the service area. Service aisles may form part of the internal circulating road system.

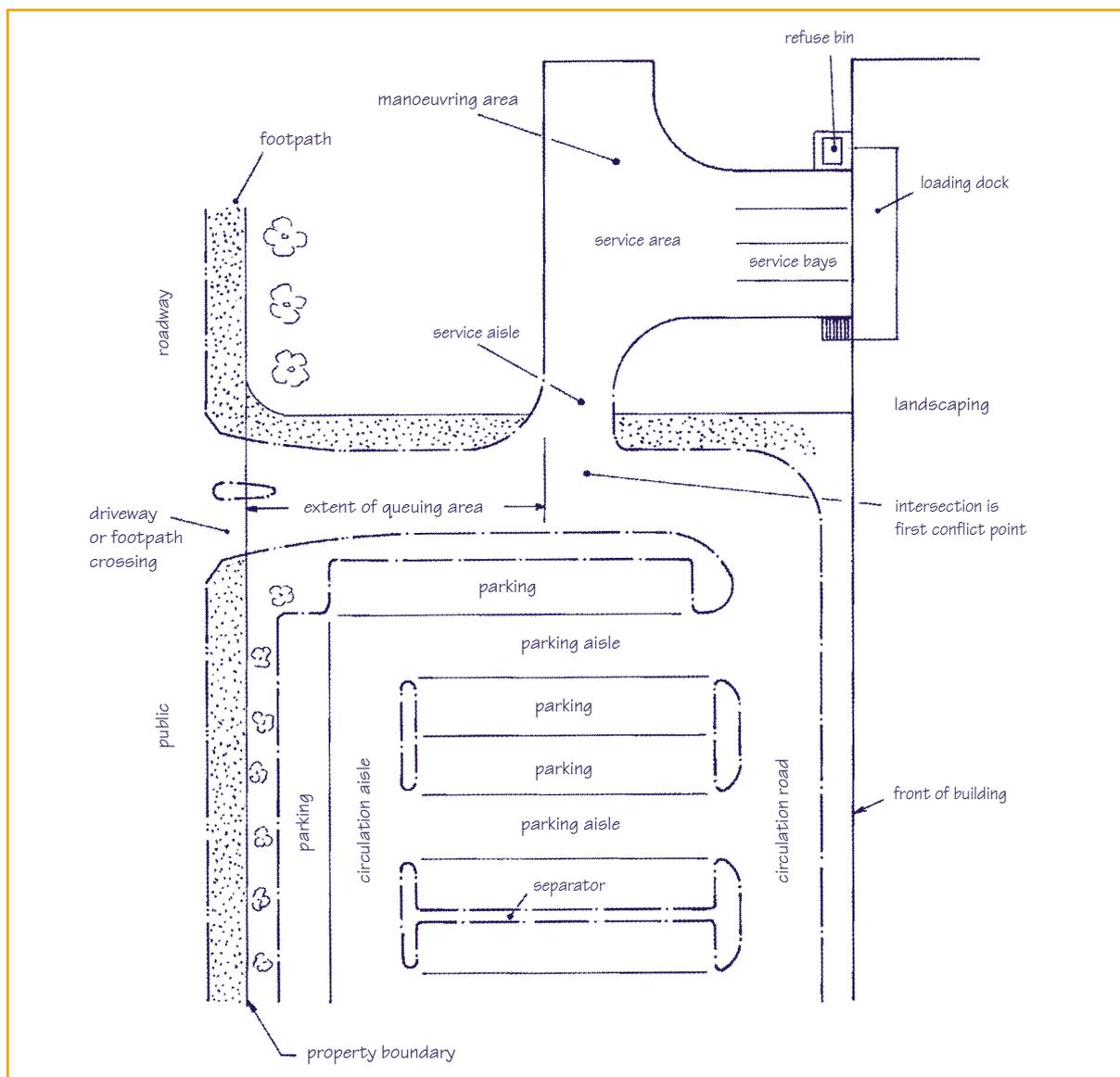


Figure a Illustration of definitions

**Service area:** the area on a development site allocated for manoeuvring, standing, loading or unloading of service vehicles.

**Service bay:** a parking bay for service vehicles engaged in loading/unloading and where a loading dock may or may not be provided.

**Service vehicle:** a vehicle used to supply or remove goods or services to/from a development.

**Sight distance:** the distance over which visibility occurs between a driver and an object, or between two drivers, at specific heights above the ground.

**Sight line:** a straight line of clear view between two objects over which sight distance is measured.

## 2 Design vehicle guidelines

### 2.1 Design vehicle selection

Developments are to be designed to accommodate the largest service vehicle likely to access the site.

*Table 1* lists the development types recognised under the City Plan and the corresponding design vehicles for which provision is to be made. Provision may be varied from that specified, particularly for multiple use/activity developments or for the unique characteristics of a purpose built development.

Design vehicle types are nominated in *Table 1* (Columns 2, 3 and 4) for each development type. The vehicle nominated in Column 2 is to be used for access driveway design, and adequate on-site standing area as described in Section 2.2.1. The vehicles nominated

in Columns 3 and 4 are to be used for design of on-site servicing facilities as described in Sections 2.2.2 and 2.2.3.

Drawings in Section 7 show the design vehicle types to which reference is made in this Planning Scheme Policy and the corresponding dimensions and turning paths for the design of site access, internal roadways and manoeuvring areas.

## 2.2 Influence of frequency of access and road type

### 2.2.1 Occasional access

Site access is to be provided for vehicles that occasionally service a site as part of its normal operation. Examples of this type of servicing are a furniture removal van at a multi-unit dwelling or office development and a refuse collection vehicle at a community activities facility.

Provision for servicing by the vehicle type nominated in Column 2 of *Table 1* is to ensure that:

- the vehicle can stand wholly contained within the site
- reverse manoeuvres are limited to one only, either to or from the site
- the swept path of the vehicle does not have a greater overall width than the access driveway.

### 2.2.2 Major road access

Where access to a site is via a major road, provision is to be made for servicing by the design vehicle nominated in Column 3 of *Table 1* to ensure it can:

- enter and leave the site in a forward direction
- traverse the site on circulation roads/aisles to access service areas
- manoeuvre on-site to allow parking and loading/unloading in a designated service area.

### 2.2.3 Minor road access

Where site access is via a minor road, on-site manoeuvring and full loading bay provision for the largest design vehicle is not essential. Therefore, the design vehicle nominated in Column 4 of *Table 1* is to be used for the design of on-site servicing provisions, as per Section 2.2.2 above, subject to the following:

- the Column 3 (major road) design vehicle can stand wholly contained within the site without occupying any designated queue areas, or blocking access to more than 50% of car parking spaces
- any on-street manoeuvring by the Column 3 (major road) design vehicle can be limited to reversing on or off the site in one movement only
- the swept path of the Column 3 (major road) design vehicle may cover the overall width of a two-way undivided driveway.

**Table 1 Design vehicle for development type**

Column 1	Design vehicle (Refer Section 7, Table 19)		
	Column 2	Column 3	Column 4
Development type <sup>(1)</sup>	Occasional access	Regular access	
		Major road	Minor road
Caravan park	AV	RCV	MRV
Carpark	MRV	SRV	SRV
Cemetery	MRV	MRV	MRV
Child care facility	VAN	VAN	VAN
Community facilities	RCV	RCV	MRV
<i>Hall</i>			
<i>if music/concert</i>	RCV	RCV	LRV
<i>otherwise</i>	RCV	RCV	SRV
<i>Hospital</i>	RCV	RCV	LRV
<i>Youth club</i>	COACH	SRV	VAN
Display and sales activities	AV	AV	AV

Column 1	Design vehicle (Refer Section 7, Table 19)		
	Column 2	Column 3	Column 4
<b>Development type<sup>(1)</sup></b>	<b>Occasional access</b>	<b>Regular access</b>	
		<b>Major road</b>	<b>Minor road</b>
Educational purposes	COACH	COACH	COACH
Farm	AV	AV	AV
except where			
<i>Cattery or kennels</i>	SRV	SRV	SRV
<i>Intensive animal husbandry</i>	LRV	LRV	LRV
<i>Stockyard</i>	AV	AV	AV
Funeral parlour	RCV	RCV	SRV
Indoor sport and recreation	RCV	RCV	LRV
except where			
<i>Sports centre</i>	AV	AV	AV
Industry <sup>(3)</sup>	AV	AV	AV
Multi-unit dwelling (where more than 10 units) <sup>(2)</sup>	LRV	VAN	VAN
except where			
<i>Retirement village</i>	RCV	RCV	MRV
Office	RCV	Based on GFA (refer to Table 2)	
Outdoor sport and recreation <sup>(3)</sup>	RCV	RCV	MRV
except where			
<i>Camping ground</i>	RCV	COACH	SRV
<i>Motor sport</i>	AV	AV	RCV
<i>Riding school</i>	LRV	LRV	MRV
<i>Zoo</i>	AV	LRV	MRV
Park	COACH	RCV	SRV
Restaurant <sup>(3)</sup>	RCV	RCV	MRV
Service station	AV	AV	AV
except where			
<i>Car wash only</i>	SRV	SRV	SRV
<i>Vehicle repair only</i>	MRV	MRV	C&T
Shops	AV	AV	LRV
except where			
<i>Roadside stall</i>	RCV	RCV	MRV
<i>Showroom</i>	AV	AV	AV
<i>Veterinary facility</i>	MRV	SRV	SRV
Short term accommodation where <sup>(2)</sup>			
<i>Backpacker's hostel</i>	SRV	SRV	VAN
<i>Hotel (refer to 2.3.3)</i>	AV	AV	RCV
<i>Motel (refer to 2.3.3)</i>	RCV	SRV	SRV

Column 1	Design vehicle (Refer Section 7, Table 19)		
	Column 2	Column 3	Column 4
<b>Development type (1)</b>	<b>Occasional access</b>	<b>Regular access</b>	
		<b>Major road</b>	<b>Minor road</b>
Utility installation	LRV	LRV	LRV
except where			
<i>Bus station, Landing</i>	COACH	COACH	COACH
<i>Airport, Port</i>	AV	AV	AV
<i>Marina</i>	AV	AV	RCV
<i>Veterinary facility</i>	MRV	SRV	SRV
<i>Warehouse</i>	AV	AV	AV

- (1) Where a development listed in Schedule 1 of Industrial Uses in Chapter 3 is contained in the Industry Area, has a site area in excess of 1,000m<sup>2</sup> and a frontage greater than 25m, the design vehicle will be that pertaining to a Schedule 2 listed Industry in Chapter 3.
- (2) Provision is to be made for on-site refuse collection for these residential uses. Areas provided for manoeuvring, loading and unloading of the design vehicle may include areas nominated as car spaces. Only very large residential developments should provide separate service bays or areas.
- (3) Areas provided for manoeuvring may include areas nominated as carparking spaces.

### 2.3 Number of bays required

The minimum numbers of on-site service bays to be provided for offices, shops and restaurants and hotels and motels are shown in *Tables 2, 3 and 4*.

As a guide, the total number of bays for multi-use developments can be determined by addition of the required bays for the individual development components. It is recognised, however, that large multiple-use development with centralised service vehicle areas require fewer service bays than the sum of the individual requirements. In such cases, or where the applicant for development wishes to make provision for fewer service vehicles, the advice of an experienced professional traffic engineer is to be sought.

#### 2.3.1 Business

The majority of vans accessing business developments will be courier vehicles. Provision for these and taxis is to be positioned near main building entrances and can be in the form of short-stay layby areas. Bays provided for couriers and taxis are to be clearly visible from access driveways and/or frontage road/s.

Where emergency power generating facilities are to be installed, provision for fuel delivery is required.

Developments exceeding 1,000m<sup>2</sup> gross floor area should provide for access and on-site standing of an LRV (e.g. furniture removal van). A dedicated service bay is not required.

**Table 2 Service bays required for business**

Gross floor area (m <sup>2</sup> )	Service bays required <sup>(1)</sup>			
	VAN	SRV	MRV	LRV
0—999	-	1	-	-
1,000—2,499	1	-	1	-
2,500—3,999	2	1	1	-
4,000—5,999	3	1	1	-
6,000—7,999	4	1	1	-
8,000—9,999	4	2	1	-
10,000—14,999	4	2	1	-
15,000—19,999	5	2	1	-
20,000—34,999	5	2	2	-
35,000—49,999	5	2	2	1
50,000—64,999	6	2	2	1
65,000 and over	6	2	3	1

- (1) For explanation of design vehicle types, see Section 7, Table 19.

### 2.3.2 Shop or restaurant

**Table 3 Service bays required for shops or restaurants**

Gross floor area (m <sup>2</sup> )	Service bays required <sup>(1)</sup>				
	VAN	SRV	MRV	LRV	AV
0—199		1			
200—599	1		1		
600—999	1	1	1		
1,000—1,499	2	1	1		
1,500—1,999	2	2	1		
2,000—2,799	2	2	2		
2,800—3,599	2	2	2	1	
3,600—4,399	3	2	2	1	
4,400—6,499	3	2	2	1	1
6,500—8,499	4	2	2	1	1
8,500—11,499	4	3	2	1	1
11,500—14,749	5	3	3	1	1
14,750—17,999	5	3	3	1	1
18,000—20,999	6	3	3	1	1
21,000—23,999	6	3	3	2	1
24,000—26,999	6	3	3	2	2
27,000—29,999	6	3	3	3	2
30,000—32,999	7	3	3	3	2
33,000—35,999	7	3	4	3	2
36,000—38,999	8	3	4	3	2
39,000—41,999	9	3	4	3	2
42,000 and over	10	3	4	3	2

(1) Where gross floor area exceeds 200m<sup>2</sup> it is expected that provision be made for on-site refuse collection.

(2) For explanation of design vehicle types, see Section 7, Table 19.

The following requirements apply to shopping centres:

- the table is to be applied to each individual retail component comprising the development
- the service bays related to each component are to be located immediately adjacent to the component
- specialty shops in a shopping centre with a gross floor area less than 200m<sup>2</sup> will be grouped together and treated as a single retail component for the purposes of applying the above table. For this purpose, MRV class vehicles will be provided for in lieu of LRV and AV class vehicles.

For shopping centres in the Multi-purpose Centre 1—City Centre, LRV class vehicles can be substituted for AV class vehicles as design vehicles.

### 2.3.3 Hotel/motel

**Table 4 Service bays required for hotel or motel**

No. of rooms	Service bays required <sup>(1)</sup>			
	VAN	SRV	MRV	LRV
0—199	1		1	
200—399	1		1	1
400—599	1	1	1	1
600 and over	1	2	1	1

(1) For explanation of design vehicle types, see Section 7, Table 19.

The following details also apply to hotels/motels:

- the following provision is to be made for public areas such as bar, tavern, restaurant, meeting rooms, convention rooms, etc:
  - 1 MRV per 6,000m<sup>2</sup>
  - 1 Van per 1,000m<sup>2</sup>
- in the Multi-purpose Centre 1—City Centre, an LRV may be provided in lieu of an AV in *Table 1*
- provision is to be made for on-site refuse collection in all developments of this type
- short stay layby areas to be provided for tourist coaches, passenger set down, couriers (vans) and taxis near main building entrances, and are to be clearly visible from access driveways and/or frontage road/s
- hotels with large public function areas should consider provision of site area for standing of television relay vehicles.

## 3 Site access design guidelines

### 3.1 General

An access driveway creates a new intersection whose configuration is to satisfy the basic traffic design criteria for all intersections with regard to driver behaviour, safety of pedestrians and vehicle characteristics. Access treatments range from minor concrete crossovers to major signalised intersections.

The number of driveways accessing a particular site is to be kept to the minimum necessary to allow satisfactory traffic operation for the site. Generally, only a single access

point (entrance/exit) will be approved for any particular development. However, this may be relaxed where it can be demonstrated that safety and traffic operation on the road are not compromised, or where pedestrian safety can be improved by such a design.

Access driveways generally perform the dual function of providing access to carparking areas as well as to servicing areas and are to be located and designed to optimise public safety and convenience. In a large development, separation of car and service vehicle access may be appropriate, particularly when the volume of service vehicles comprises a significant proportion of the total volume of traffic generated by the development.

All developments are to provide internal traffic circulation to avoid use of the public road system for movements between carparking and/or servicing areas of a site.

Developments with access via signalised intersections or roundabouts may need to dedicate land as public roadway to ensure lawful priority of traffic movements under the *Traffic Act 1949*.

Access to developments is preferred via minor roads rather than major roads, provided the traffic generated by the development will not compromise the amenity of that road. In some cases, ameliorative works may be required in the minor road/s to alleviate possible amenity impacts.

### 3.2 Location

When determining the location of an access driveway the following design constraints are to be taken into consideration:

- characteristics of frontage road (type, traffic volumes, and vertical and horizontal geometry)
- sight distance requirements
- location of intersections, median openings, other driveways, etc.
- queue and turn lane lengths at signalised intersections
- location of existing services, bus stops, taxi ranks, traffic control devices and significant trees
- pedestrian and cyclist requirements
- other Council Planning Scheme Policy requirements, e.g. landscaping
- requirements of State transport authorities (if relevant).

Access to developments will not be permitted through bus stops and/or taxi ranks.

Driveways and their splays are not to protrude across shared property boundaries, or the projection of such a boundary line to the carriageway, except where joint property access is proposed.

As a general rule, driveways are to be located as far as possible from intersections in accordance with *Table 5*. Exceptions will only be permitted within the restricted areas where it can be demonstrated that safety and operational standards are not compromised.

Distances from intersections are to be measured from the point at which the frontage property boundaries intersect, disregarding any existing or proposed truncations.

**Table 5 Driveway location**

Type of frontage road	Adjacent feature	Minimum separation of minor driveway from adjacent feature
Minor	Minor intersection	10m from intersection
	Major intersection	20m from intersection
	Median break	10m from median nose
	Other driveway	3m along kerb
	Traffic signals	Clear of queue areas and turning lanes
Major	Minor intersection	20m from intersection
	Major intersection	30m from intersection
	Median break	15m from median nose
	Other driveway	15m along kerb
	Traffic signals	Clear of queue areas and turning lanes

### 3.3 External considerations

Access to major roads, if permitted at all, will usually be restricted to left-in/left-out traffic movements by means of a raised median. Construction of a central median may be required to ensure right turns in/out of the site are not possible.

Road widening and resultant land dedication may be necessary for the introduction of a median and/or left/right turn lane for access to a development.

Median breaks will generally not be approved on major roads to provide ingress to or egress from private property. However, median breaks to allow right turns and U-turns will normally be provided at regular intervals.

Breaks will only be specifically considered for major developments where:

- the entrance/exit is such that it can function as a public street with respect to priority controls (land dedication as road will often be necessary to achieve this)
- the spacing of the major intersections so formed is considered satisfactory for current operations and does not prejudice plans for future major traffic control
- the disruption to through traffic overall would be greater without the median break than it would if no break was provided.

Single median breaks should be used to provide access to more than one contiguous development, either by positioning the break opposite a driveway on a common boundary, or via internal access easements to which the Council will be a party.

Where a median break is approved it is to be accompanied by an indented right turn lane.

Where the major road does not have a central median, and it is appropriate to permit right turn access, it will usually be necessary to provide passing lane or turn lane treatments for both left and right turns into the site, which may require road widening and land dedication. For left or right turn lanes, a minimum length of 60m, consisting of a 30m lane and 30m taper would be expected.

The Council always maintains the right to construct central medians or close any median break, if this is considered necessary to improve traffic operating conditions.

### 3.4 Sight distance

All driveways are to be located and constructed so as to provide sight distances not less than those shown in Table 6. The driveways are measured from a point 5m outside the edge of the through carriageway as shown in Figure b.

**Table 6 Sight distance for access driveways**

Speed environment (kph)	Sight distance (metres)
50	90
60	110
70	130
80	150

Driveways may be accepted with sight distances less than those described above, but greater than the absolute minimum requirements described below in Table 7, where it can be satisfactorily demonstrated that there is no practicable alternative, and public safety will not be unreasonably compromised.

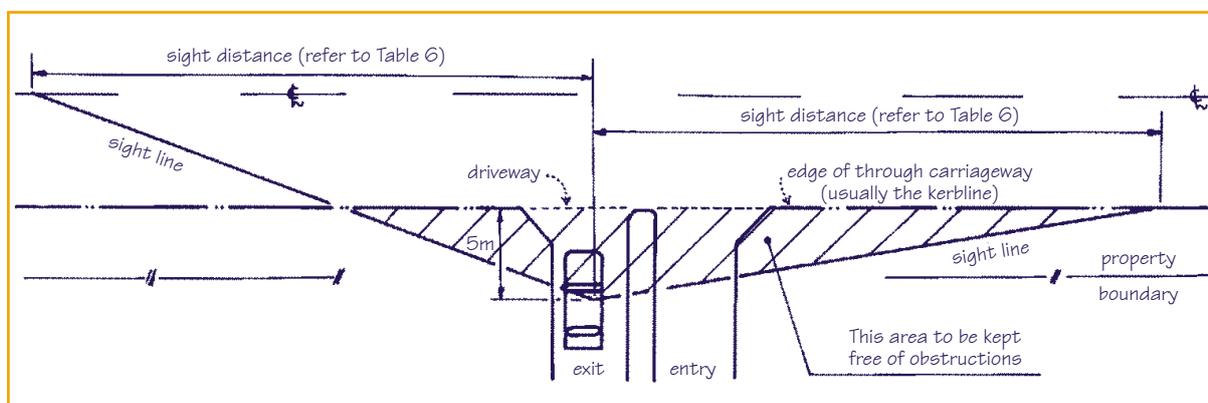


Figure b Location of sight line

**Table 7 Absolute minimum site distance for access driveways**

Access driveway	Speed environment (kph)			
	50	60	70	80
Distance for driveways providing access for up to 25 spaces from a minor road, measured from a point 3m out from the through carriageway	40	55	70	85
Distance for driveways providing access for up to 250 spaces from a minor road or up to 25 spaces from a major road, measured from a point 4m out from the through carriageway	55	70	85	105
Distance for driveways providing access for up to 500 spaces from a minor road or up to 250 spaces from a major road, measured from a point 5m out from the through carriageway	70	85	100	115

All sight distances described in *Table 6* and *Table 7* are measured from a height of eye of 1,150mm to a height of object of 600mm.

If driveways are in locations and situations where it cannot be reasonably assumed that vehicles will stop before attempting to cross or enter the external traffic stream, the minimum dimensions clear of the through carriageway from which sight distances are to be measured (3m and 4m respectively) will be increased to 5m.

Service vehicles require significantly longer gaps in traffic than cars to complete crossing, merging and turning manoeuvres. However, because of their increased conspicuity and driver eye height compared with drivers in cars, it is considered reasonable that sight distance for service vehicles be generally in accordance with *Table 6*.

To ensure adequate visibility between vehicles on a driveway and pedestrians on the footpath, sight splays are to be provided at the property boundary as shown in *Figure c*.

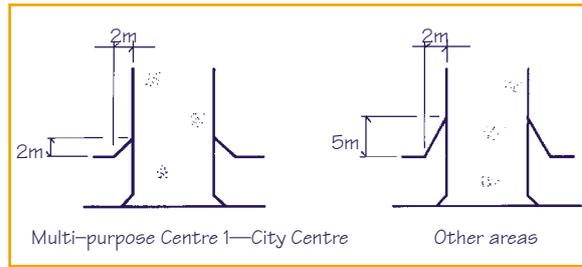


Figure c Minimum pedestrian sight splays

### 3.5 Driveway selection

#### 3.5.1 General

The type and width of driveway appropriate for a development depends on:

- the volume of traffic generated at that driveway by the development
- the type of road to which access is sought
- the existing and predicted future traffic volumes of the road to which access is sought
- the number of carparking spaces served by the driveway
- the size and type of the largest vehicle likely to use the driveway on a regular basis (usually a service vehicle)
- the number of service bays served by the driveway.

Driveways are to be constructed in accordance with *Figure d*.

For roads under the control of the Department of Main Roads, its separate design requirements will need to be determined.

#### 3.5.2 Driveway selection

A driveway type should be selected according to its function with regard to carparking or service vehicle requirements, or both. The following procedure is recommended for this purpose:

- determine driveway function and select driveway type from relevant table:
  - cars only, *Table 8*
  - service vehicles only, *Table 9*
- where a driveway provides access for both cars and service vehicles, a driveway suitable for both functions should be selected.

Seven types of standard driveways are shown in *Figure d*. For developments that generate large volumes of traffic, and where the use of a standard driveway would cause unacceptable delays or hazard to traffic, a fully channelised intersection may be required.

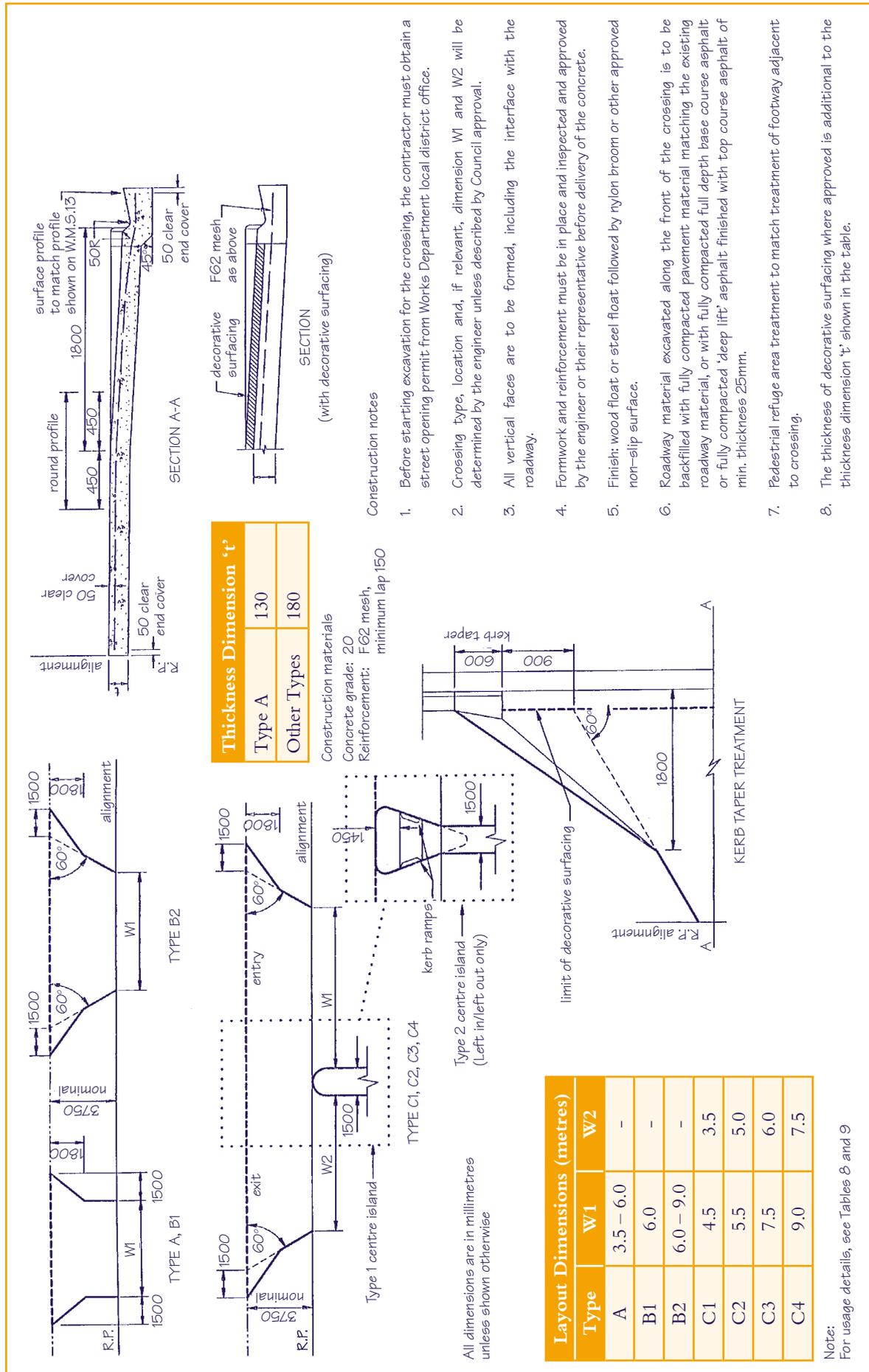


Figure d Standard non-residential vehicle crossing

### Driveways for carparking areas

Each driveway of a carparking area having multiple points of access is to be designed on the basis of the

number of spaces effectively served by that driveway. The driveway type should then be selected from *Table 8*.

**Table 8 Driveway selection for cars only**

Turnover rate of carparking area <sup>(1)</sup>	Type of frontage road	Type of driveway Number of spaces in carparking area			
		1-25	26-250	251-500	over 500 <sup>(2)</sup>
Low/Med	Minor	A <sup>(3)</sup>	B2	C1	C3
Low/Med	Major	B1 (6m)	C1	C2	C3
High	Minor	B1 (7m)	C1	C2	C3
High	Major	B2 (7m)	C2	C3	C3

(1) Low to medium parking turnover rates are likely to be generated by residential, industrial and commercial developments. High parking turnover rates are likely to be generated by entertainment, transport, retail and fast food developments.

(2) Carparking areas containing over 500 spaces or generating more than 1,000vpd are to be assessed for the need of an appropriately designed channelised access intersection.

(3) On minor roads, residential (Type A) driveways less than the 6m wide are acceptable for streetscape enhancement, provided normal manoeuvring and queuing requirements are satisfied.

### Driveways for service vehicles

Driveway types for service vehicles are determined according to the turning path requirements of the relevant design vehicle nominated in Column 2 of *Table 1*. The appropriate driveway is selected from *Table 9*.

The following details also apply to driveway selection for service vehicles:

- where traffic is required to be restricted to left in/out movements only, a type 2 driveway centre island is to be used
- for entry or exit only driveways, the relevant half of a Type C driveway is to be used
- where the volume of traffic generated by a development contains a substantial proportion of service vehicles and exceeds 500vpd, then a channelised access intersection may be required in place of a standard driveway.

**Table 9 Driveway selection for service vehicles**

Frontage road	Type of driveway		
	Minor road	Major road	Major road
Generated traffic	N/A	<100vpd	N/A
Nominated design <sup>(1)</sup>	Driveway type		Driveway type
VAN	A (6m)		C1
C&T	A (6m)		C1
SRV	B1 or B2 (6m)		C2
MRV	B2 (7m)		C2
LRV	B2 (7m)		C2
RCV	B2 (7m)		C2
COACH	B2 (9m)		C4
AV	B2 (9m)		C4

(1) For explanation of design vehicle types, see Section 7, Table 19

### 3.6 Provision for queues

Entry and exit driveways are to provide for queues of vehicles so that queues do not disrupt traffic operations on the frontage roads. There is not to be any internal intersections or parking manoeuvres within the defined queue area. Entry queues are of primary importance since they have the potential to most readily disrupt external traffic, but exit queues can also disrupt internal circulating traffic, thereby blocking entry lanes.

The extent of the design queuing area is a function of a number of factors, including:

- the size of the carparking area and the design turnover rates
- the type and capacity of any control facility
- the importance of the frontage road
- the design of the carparking area beyond the queuing area.

In the absence of more reliable site specific data, the queue requirements shown in *Table 10* are to be used as a preliminary guide. In some unusual design situations, greater queue provisions may be required.

**Table 10 Minimum queuing provisions**

Carparking area capacity (spaces)	Number of vehicles in queue
1–25	1
26–50	2
51–75	3
76–100	4
101–150	5
151–200	6
201–250	7
Over 250	7 plus 1% of capacity over 250 spaces (rounded upwards)

The minimum queue provision for any carparking area is one vehicle at the entry and one at the exit. Each vehicle is assumed to occupy 6m in length.

The required queuing area is to be distributed among the various accesses according to the expected traffic distribution characteristics of the site.

Where control facilities such as card readers, ticket machines, etc. are provided, normal provision for queues is made from that control point. Any such machines are to be positioned on a central median or behind a barrier that will protect them from damage by vehicles.

The queuing area in carparks using attendant parking is to be at least twice the length of that given in *Table 10*.

In the instances where security gates are proposed at the entrance to a development, the required queuing length is to be provided between the property boundary and the gate system. In addition to the queuing area, enough space is to be provided in front of the security gates to enable a car to manoeuvre and enter the road system in a forward gear.

A separate internal queuing space for vehicles is to be provided at drive-in takeaway facilities associated with fast food stores and hotel drive-in bottle shops (10 vehicles and 12 vehicles respectively).

In the design of a queuing area the following cross-section dimensions are to be used:

- single queuing lanes are to be a minimum of 3m wide with at least 300mm horizontal clearance provided on each side of the lane. An adjoining breakdown lane/strip 2m wide should be considered on one side of a single queuing lane
- multiple queuing lanes are to be a minimum of 2.7m each with at least 300mm horizontal clearance provided on each side of the queuing area.

### 3.7 Signs

Direction, regulatory, warning and information signs are to be erected on site to control traffic movements and driver behaviour and to warn of any potential safety hazards.

Signage also includes pavement markings.

Signs are to be provided on site to clearly indicate the existence and location of access points to carparking areas:

- where such parking areas are located at the rear of a development
- where access to the carparking area is not from the main frontage road
- where there are multiple access points serving different carparking areas
- where visitor parking is provided for multi-unit residential developments and is not visible from the frontage road or access driveway
- where ingress/egress is via one way driveways.

All traffic/parking control signs and pavement markings are to conform with the requirements of the relevant Council Standards or the *Manual of Uniform Traffic Control Devices (Queensland)*.

Where developments are expected to generate vehicular traffic movements during hours of darkness, self-illuminated and/or reflectorised signs complying with current State or national standards are to be provided.

### 3.8 Special requirements for Major Centres

The particular conditions encountered in the City Centre and City Centre-type environments having intense commercial activity call for differing design criteria from that normally required with a suburban development.

These environments are typified by the following conditions:

- high pedestrian volumes
- high utilisation of kerbside space, e.g. bus stops, taxi ranks, parking, loading
- a high level of signalisation—typically at most intersections
- platooned traffic flows
- a higher level of driver alertness
- lower vehicle speeds.

It is recognised that the normal design criteria for site access may not be applicable to these conditions and the appropriate design standards may reflect the lower vehicle speeds and greater driver alertness.

Access driveways within Major Centres will generally not be permitted within 30m of any signalised intersection and are to be located in consultation with Council. Shared access arrangements or amalgamation of smaller lots may be required to provide acceptable access for new developments.

Where significant traffic volumes access a site across a footpath carrying high pedestrian volumes, grade separation of the driveway may be necessary to resolve the pedestrian/vehicle conflict.

Driveways across footpaths carrying more than 300 pedestrians during the busiest hour of a normal weekday will only be accepted where it can be satisfactorily demonstrated that pedestrian priority will not be threatened.

Sight distances for access driveways in Major Centres are to be in accordance with *Figure b* measured from a point 3m from the edge of the through carriageway, and *Figure c*.

Carparking areas in Major Centres often require control facilities such as card readers and associated queuing requirements and ticket machines. These facilities need to be considered early in the design of the carparking areas, as they are difficult to incorporate once the carparking area is constructed.

## 4 Servicing layout design guidelines

### 4.1 General

Adequate facilities for servicing developments are to be provided on site to ensure loading/unloading activities do not occur on the street and compromise the safety and capacity of the public road system.

The design of site layouts is to provide for the operational requirements of service vehicles. Such requirements are based on vehicle dimensions and turning paths for which design templates have been derived and are provided in Section 7 of this Planning Scheme Policy. There are two types of templates:

- manoeuvring templates for movements made at stalling speeds and used for design of service areas
- turning templates for movements at low speed and used for driveway and internal roadway design.

If vehicles other than those for which templates are shown in Section 7.2 are proposed to service a development, manoeuvring provision is to be designed using dedicated templates that may already be available for the vehicles, or from computer generated turning paths, or from field trials of actual vehicle performance.

### 4.2 Location

Service areas are to be located close to service entrances (or other building entrances) to ensure they are able to be conveniently utilised and to discourage the use of other areas for loading/unloading.

Service areas are to be separated from areas of passenger vehicle or pedestrian movement.

### 4.3 Service aisles

Service aisles are roadways connecting service areas with driveways, and form part of the internal circulation road system. Required widths for straight sections of service aisles are to comply with those given in *Table 11*. The width of curved sections is determined by the swept path of the relevant design vehicle (refer to *Table 11*).

### 4.4 Service areas

A service area consists of space allocated for manoeuvring, standing and loading or unloading of service vehicles. Its size is determined by the addition of its components: manoeuvring area, service bays, loading docks and refuse collection zones. *Figure e* shows the areas necessary for manoeuvring into and out of loading bays and is suitable for preliminary design purposes. Detailed design should utilise turning templates. Areas such as that shown in *Figure e* are required unless drive through servicing facilities are provided.

Where the volume of service vehicle traffic is significant, manoeuvring areas larger than the minimum are to be provided in order to promote easier and more efficient vehicle movements.

Manoeuvring into a service bay is to be possible with all other bays occupied.

Service and manoeuvring areas are to be signed and delineated to encourage correct utilisation and discourage or restrict the parking of non-service vehicles within their boundaries. The configuration of the manoeuvring area is to allow the design vehicle to dock or park in a service bay with only one reverse movement. When a service vehicle is required to reverse into a loading dock, the design is to maintain the truck driver on the inside of the turning movement as shown in *Figure f*. This ensures that the truck driver's view of the loading bay is not obscured by parts of the vehicle or the truck load.

Designs necessitating turns through angles greater than 120° at minimum radii by articulated or large rigid vehicles can cause tyre, pavement or vehicle structural damage and therefore are to be avoided.

#### 4.5 Service bays

The bay dimensions relevant to each design vehicle are given in *Table 11*. The width dimensions provide approximately 0.5m clearance each side of a vehicle to allow cabin door opening, clearance for mirrors, etc. and access to load restraints. The bay length dimensions provide similar clearances for access to loads and variations in overall vehicle size.

#### 4.6 Refuse collection

Access for refuse collection vehicles to bins or compactors is to be maintained at all times. Where evidence from a refuse collection contractor indicates collection will occur outside normal service/delivery or business times, it may be permissible to allow refuse collection vehicles to utilise service bays or parking spaces for access.

The minimum vertical clearance required for movement of a refuse collection vehicle is 4.5m. Larger operational clearance dimensions are shown in *Table 11* for various types of collection systems. Any application proposing to utilise a waste collection system requiring clearances less than 4.5m for vehicle movement is to include a letter from the proposed waste collection contractor giving full details of the proposed system.

Within the City Centre preference is given to utilising refuse collection vehicles that can be accommodated within a maximum 4.5m vertical opening, to minimise visual impact on the streetscape caused by larger openings.

Where disposal of industrial or commercial liquid waste by discharge to road tankers is necessary, the road tanker is to be able to stand on-site and comply with all other relevant regulations.

#### 4.7 Fuel deliveries

Provision for fuel deliveries for any purpose, e.g. emergency power plant, complies with *AS1940—The Storage and Handling of Flammable and Combustible Liquids* and Council's Local Laws.

Provision for a fuel delivery tank vehicle is to comply with the requirements for an LRV. Where a development is designed to accommodate a tank vehicle on site, and delivery occurs outside building operating times, use of an internal aisle or roadway for tank vehicle parking may be acceptable.

For other times, a separate parking bay that can be part of a multi-use area, e.g. forecourt, public space, may be provided.

#### 4.8 Provision for queues

Provision is to be made to ensure service vehicles entering a site do not queue across footpaths or onto external roads. Also queuing of traffic exiting a site is to be accommodated within the property boundaries (minimum requirement: one design vehicle).

The site design is to prevent any manoeuvring, or intersections of internal roads, occurring within the defined queuing area. Internal roads or aisles shared by service vehicles and cars are to be designed to cater for the queuing requirements of both.

#### 4.9 Sight distance

Sight distances applicable to service vehicles are to comply with the requirements described in Section 3.4.

#### 4.10 Gradients

For maximum permissible gradients, refer to *Table 11*.

Changes of surface gradient are not to exceed an algebraic change of more than 5% (1:20).

Where this would be exceeded, a grade transition is to be provided. This is to prevent scraping of vehicle undersides or structural damage to articulated vehicle's towing connections (refer to *Figure g*).

A method of designing a grade transition assumes that the grade change does not exceed 5% (1:20) over a minimum horizontal distance equal to the length of the longest vehicle expected to traverse the site. An example follows.

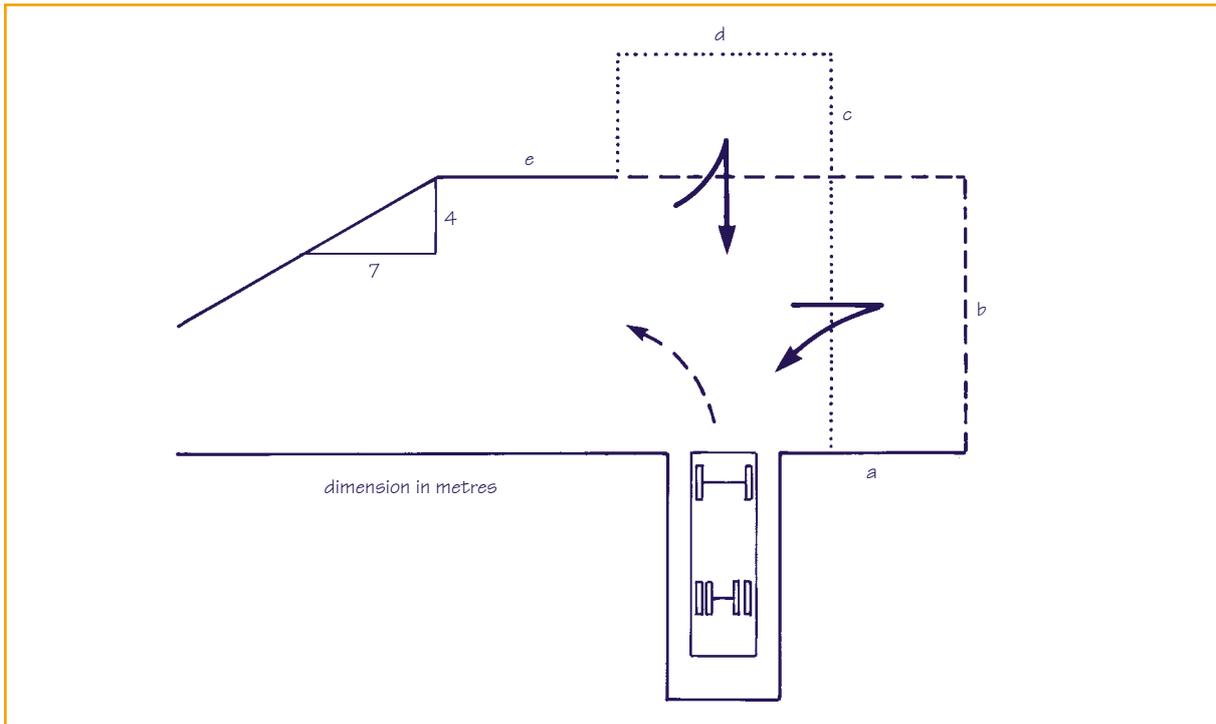


Figure e Manoeuvring area: preliminary design

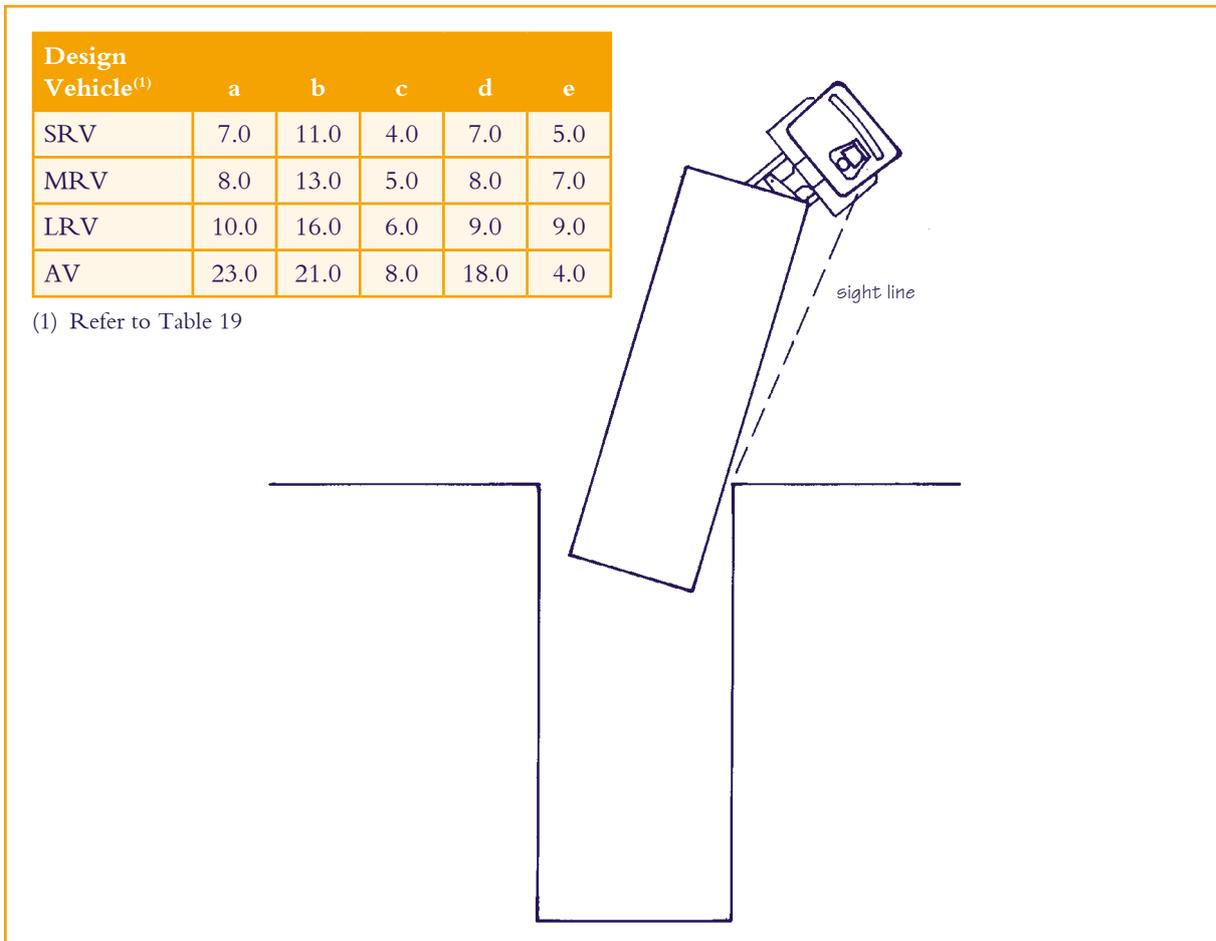


Figure f Preferred approach to service bays

Algebraic change of gradient = 1:8 - 1:20 = 12.5% - 5.0% = 7.5% where > 5%. Therefore, adopt intermediate gradient = 7.5% ÷ 2 + 5% = 8.75%, or approximately 1:11 over a 6.4m horizontal projection (assuming vehicle length = 6.4m.) (refer to *Figure h*).

The design of pavements with transverse gradients exceeding 5% are to be avoided as damage to vehicles and buildings may result from the displacement of the upper portion of the vehicle body or load.

The maximum change of grade able to be traversed by car-carrier types of AV is in the order of 2% due to a lower than normal under-carriage clearance.

#### 4.11 Height clearance

The minimum height clearance required for each design vehicle is to comply with those given in *Table 11*. The minimum height is to be appropriately and clearly signed and measured from the floor to the lowest appurtenance on the ceiling, e.g. fire sprinklers, services, lighting fixtures and signs.

Care is to be exercised in building design to ensure adequate ceiling height clearance is retained throughout any grade transition (refer to *Figure i*). Areas of a site where height clearances change are to be clearly signed. Any facility to divert over height vehicles is also to be clearly signed.

**Table 11 Design dimensions for service aisles and bays**

	Design vehicle							
	VAN	C&T	SRV	MRV	LRV	RCV	COACH	AV
Minum service aisle width (m)								
- one way	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
- two way	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Minimum vertical clearance (m) <sup>(2)</sup>	2.3	2.3 <sup>(3)</sup>	3.5	4.5	4.5	4.5 <sup>(4)</sup>	4.5	4.5
Minimum bay width (m) loading/standing	3.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Minimum bay length (m) loading/standing	5.4	14.5	7.0	9.0	11.0	10.5 <sup>(5)</sup>	13.0	17.5
Platform height (m) <sup>(6)</sup>	–	–	1.75–1.9	1.95–1.1	1.1–1.4	–	–	1.1–1.4
Maximum gradient								
- general surface, manoeuvring, aisles, loading bays	1:20	1:20	1:20	1:25	1:25	1:20	1:25	1:25
Ramps								
- straight	1:6	1:6	1:8	1:10	1:10	1:10	1:10	1:10
- curved <sup>(7)</sup>	1:6	1:6	1:8	1:10	1:10	1:10	1:10	1:10
- queuing area	1:10	1:10	1:10	1:25	1:25	1:25	1:25	1:25
- traffic control point	1:20	1:20	1:20					

(1) For an explanation of design vehicle types, see Section 7, Table 19.

(2) At changes in grade the required clearance height is to be maintained at all points (refer to *Figure i*).

(3) Special trailers, e.g. horse-floats and caravans, may require greater clearance height.

(4) Operating clearances: front load 6.1m, side-load 6.7m, rear (roll-off) 7.1m.

(5) Dimension is exclusive of bin storage area.

(6) Applicable only where loading dock is provided.

(7) Measured at inside of constructed curve.

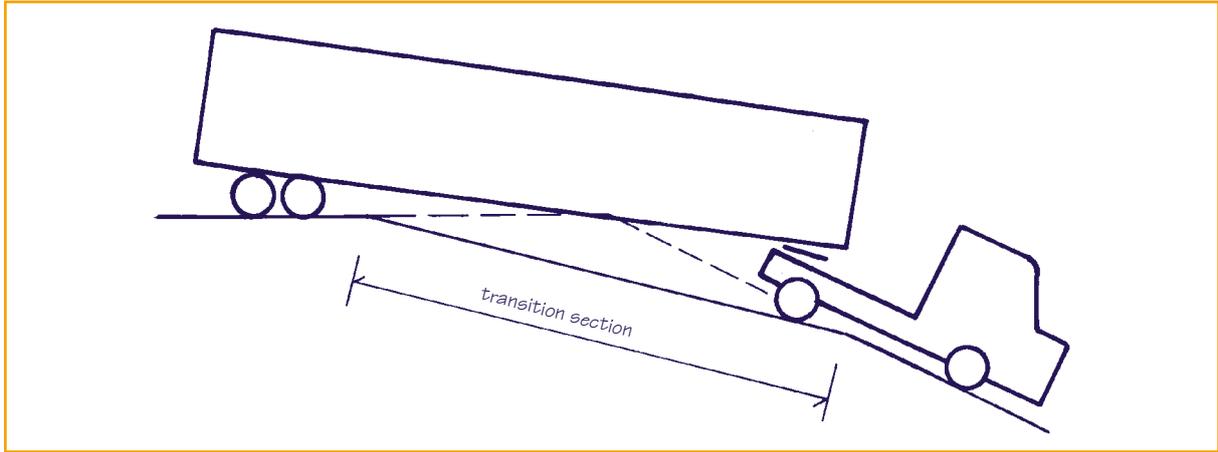


Figure g Grade transition

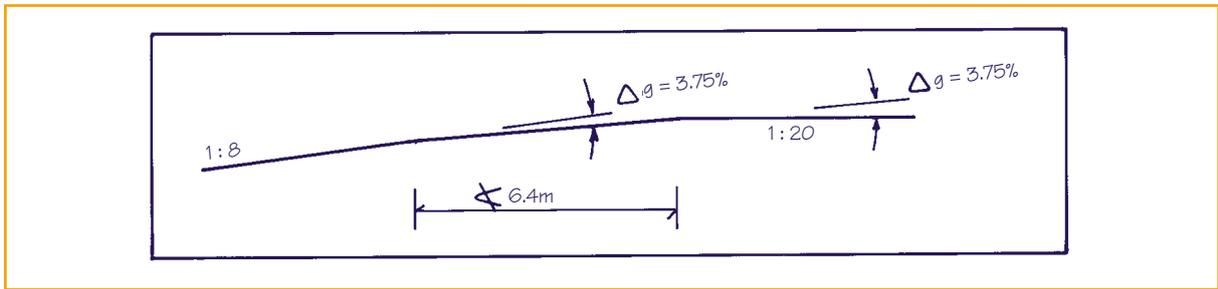


Figure h Grade transition design example

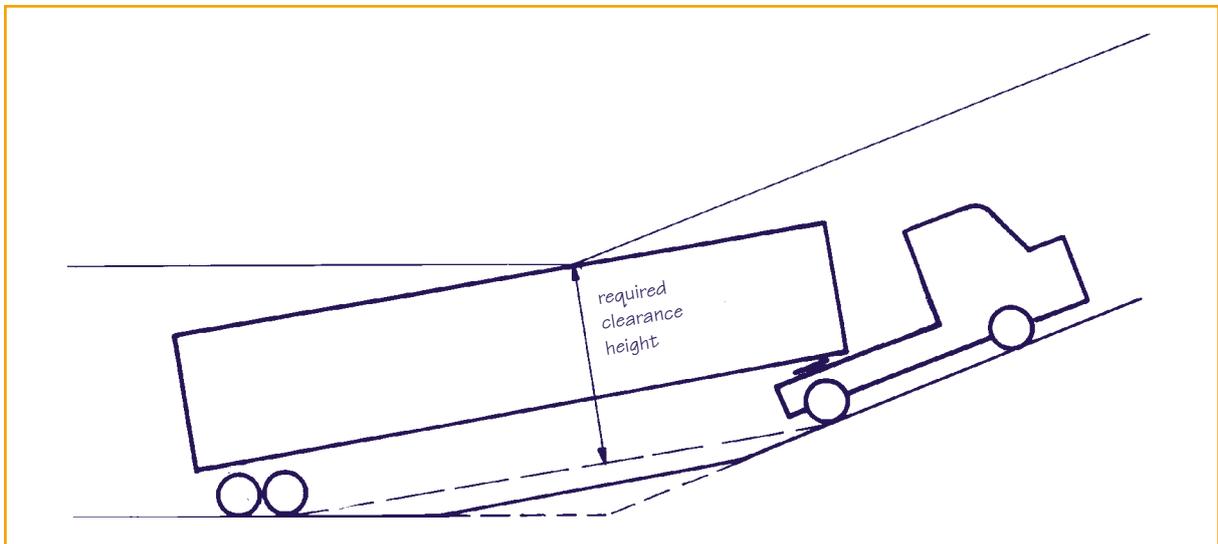


Figure i Clearance height past grade change

Additional height clearance is required for refuse collection vehicles when lifting refuse receptacles. This is dependent on the type of collection system used and varies as indicated in the notes to *Table 11*.

#### 4.12 Provision for construction

For a development all construction and associated loading, unloading and storage of materials are to be provided for on site.

Where it is not possible to comply with this requirement, and for sites within Major Centres and/or where a site gains its access directly from a major road, a submission detailing the proposed arrangements is required. Such a submission is to contain a statement of the developer's intention for the following:

- vehicular access details
- time period over which construction will occur
- kerbside allocations, e.g. parking, bus stops
- provision of alternative pedestrian routes, past or around the site
- specified hours of loading/unloading required
- remote loading areas
- employee and visitor parking areas.

Kerbside area/loading zones are not to be used for the storage of goods and/or construction materials and equipment, or for the washing of equipment or vehicles.

## 5 Carparking spaces guidelines

Guidelines for carparking spaces are shown in *Table 12*. For the purposes of the guidelines:

- the term car space means adequate space for the parking of a design vehicle car (the 'Medium Car' defined in *Table 18*), together with provision for access to such space, provided that the term does not include a parking area made available for rent, lease, or other separate occupation for a period exceeding two days unless that development is for the purpose of a carpark
- where the number of parking spaces calculated in accordance with this table is not a whole number, then the minimum number of spaces to be provided is to be the whole number next above the calculated number
- where a rate of carparking is not defined in the following table, the applicant is responsible for providing evidence in support of the carparking proposed to be provided, for assessment by Council in determining the application
- the carparking rate in any relevant Local Plan overrides the carparking rates in the table
- in a case where the purpose is proposed on land included in a Multi-purpose Centre, the applicable carparking rate is as indicated opposite 'Centre Activities'.

**Table 12 Carparking spaces**

Development	Parking rate
Caravan park	11 spaces per 10 sites plus 1 space per 10 sites as visitor spaces
Centre activities where in a Centre and where: <ul style="list-style-type: none"> <li>• the boundary of the site is within 200m of a railway station entry or a busway station, or</li> <li>• a major public transport interchange is incorporated within and directly accessible to the Centre and the interchange includes dedicated bus parking bays and transit facilities being seating, ticket vending machines and facilities and security posts</li> </ul>	a maximum of 1 space per 20m <sup>2</sup> GFA at ground floor level and 1 space per 50m <sup>2</sup> GFA above ground floor level
Centre activities where in a Centre in any other circumstance	a minimum of 3 spaces per 50m <sup>2</sup> GFA at ground floor level and 1 space per 30m <sup>2</sup> GFA above ground floor level
Child care facility	1 car space per 5 children. 60% of the parking is to be designated for staff and may be provided in tandem. If the proposal is within the grounds of a site that already provides plentiful staff parking, or if there are other alternatives available for carparking, the above parking requirement may be modified

Development	Parking rate	
Community facilities	5 spaces plus 1 space per 30m <sup>2</sup> GFA	
<i>Hospital</i>	50 spaces plus 1 space per 65m <sup>2</sup> GFA	
<i>Licensed club</i>		
<i>less than 1,500m<sup>2</sup> GFA</i>	1 space per 15m <sup>2</sup> GFA	
<i>1,500m<sup>2</sup> or greater GFA</i>	40 spaces plus 1 space per 25m <sup>2</sup> GFA	
<i>Hall or theatre</i>	1 space per 10m <sup>2</sup> GFA	
<i>Church</i>		
<i>where fronting a designated road</i>	1 space per 10m <sup>2</sup> GFA	
<i>where includes a hall</i>	as above and refer to notes at front of Section 5	
<i>all other cases</i>	1 space per 12m <sup>2</sup> GFA	
Display and sales activities	3 spaces per 50m <sup>2</sup> GFA	
<i>except where:</i>		
<i>Auction depot</i>	2 spaces plus 1 space per 100m <sup>2</sup> GFA	
<i>Vehicle sales yard or Plant sales and hire</i>	2 spaces plus 2 spaces per 5 employees	
Education purposes		
<i>if primary or secondary school</i>	1 space per 2 staff	
<i>tertiary, including TAFE</i>	1 space per 2 staff and 1 space per 10 students	
<i>otherwise</i>	Refer to notes at the front of Section 5	
House	Refer house Code and/or Residential Design—Small Lot Code	
Indoor sport and recreation		
<i>squash</i>	6 spaces per court	
<i>indoor cricket or other court game</i>	20 spaces per pitch or court	
<i>swimming</i>	15 spaces plus 1 space per 100m <sup>2</sup> GFA	
<i>gymnasium</i>	1 space per 10m <sup>2</sup> GFA	
<i>otherwise</i>	Refer to notes at the front of Section 5	
Industry	2 spaces per tenancy or lot plus 1 space per 100m <sup>2</sup> GFA	
Multi-unit dwelling	As in the following table, the total rounded up to the nearest whole number:	
	dwelling unit size/ number of bedrooms	average vehicle spaces per dwelling
	location:	A      B
	Small (<75m <sup>2</sup> ) or 1 bedroom	1      1.25
	Other	1.25      1.5
	where:	
	<p><b>A</b> means any part of the site is within 200m of a pedestrian entry to a railway station, busway station, ferry terminal or within 100m of a major road (except where the site has access to a road where on-street parking restrictions apply)</p>	

Development	Parking rate
<p><i>except where:</i></p> <p><i>Retirement village</i></p> <p><i>Boarding house</i> <i>qualifying for a subsidy for aged persons or persons with disabilities, accommodation under any law</i></p>	<p><b>B</b> means any other circumstances</p> <p>Tandem parking may be used where 2 spaces are provided for 1 dwelling</p> <p>1 space per 6 nursing home beds</p> <p>1 space per 4 hostel unit beds</p> <p>1 space per self-contained unit</p> <p>plus visitor parking at the rate of 50% of resident parking requirements</p> <p>1 space per bed</p> <p>1 car space per 3 dwellings</p>
Office	1 space per 30m <sup>2</sup> GFA
<p>Outdoor sport and recreation</p> <p><i>Camping ground</i></p> <p><i>Coursing horse racing, pacing or trotting, motor sport</i></p> <p><i>Football</i></p> <p><i>Lawn bowls</i></p> <p><i>Swimming</i></p> <p><i>Tennis</i></p> <p><i>Court games</i></p> <p><i>Otherwise</i></p>	<p>1.1 spaces per site</p> <p>1 space per 5 persons to be seated plus 1 space per 5m<sup>2</sup> of other area</p> <p>50 spaces per field</p> <p>30 spaces per green</p> <p>15 spaces plus 1 space per 100m<sup>2</sup> of site area</p> <p>6 spaces per court</p> <p>20 spaces per court</p> <p>Refer to notes at the front of Section 5</p>
<p>Restaurant</p> <p><i>less than 400m<sup>2</sup> GFA</i></p> <p><i>400m<sup>2</sup> or greater GFA</i></p>	<p>1 space per 8m<sup>2</sup> GFA</p> <p>30 spaces plus 1 space per 20m<sup>2</sup> GFA</p>
<p>Service Station</p> <p><i>where vehicle repair and service</i></p>	10 spaces plus 1 space per 60m <sup>2</sup> GFA
Shop	3 spaces per 50m <sup>2</sup> GFA
<p>Short term accommodation</p> <p><i>except where</i></p> <p><i>Backpackers hostel</i></p>	<p>1 space per unit</p> <p>1 space per 16m<sup>2</sup> GFA for any dining room as part of a motel</p> <p>1 space per 30m<sup>2</sup> GFA for non-residential component of a hotel</p> <p>1 space per 100m<sup>2</sup> GFA and parking for a mini-bus</p>
Single Unit Dwelling	Refer <b>Residential Design—Single Unit Dwelling Code</b>
Warehouse and storage	2 spaces per tenancy or lot plus 1 space per 100m <sup>2</sup> GFA
Otherwise not defined	Refer to notes at the front of Section 5

GFA = gross floor area

(1) Indicates that in a case where a car space made available as visitor parking is provided as a tandem parking space in a manner satisfactory to Council, such car space shall be regarded as a car parking space.

## 6 Carpark layout design guidelines

### 6.1 General

On-site carparking areas are to be designed to ensure they are safe and convenient to use, thereby encouraging their use in preference to on-street parking. This can be achieved through consideration of the following design principles.

‘Mandatory design principles’ (Section 6.2.1) are intended to satisfy the primary objectives of traffic and user safety and are to be incorporated in all carparking areas. The application of ‘Desirable design principles’ (Section 6.2.2) as minimum requirements will produce safe carparking layouts that are convenient to use. Typical layouts of carparking facilities are shown in Section 6.10 of this Planning Scheme Policy.

Where existing older buildings are being redeveloped, it is recognised that it may not be possible to fully comply with these principles. Any solution proposed would still have to be demonstrated to be safe and workable.

### 6.2 Design principles

#### 6.2.1 Mandatory design principles

Following are mandatory design principles for carpark layout design:

- restrict vehicles to low speeds in the vicinity of pedestrian activity. This is achieved through use of appropriate road geometry or physical devices designed to limit speed
- provide sight distances appropriate for the likely operating speeds in all areas of potential pedestrian/vehicle and vehicle/vehicle conflict, in particular, sight distances of at least 2.5 seconds of travel time at the likely prevailing speed for conflicting movements. This will often require splayed corners on structures and careful treatment of landscaping and sign placement in areas of potential conflict
- ensure no reversing of vehicles, particularly service vehicles, is to occur in areas of high pedestrian activity
- ensure on-site traffic congestion does not impact on the external traffic system.

#### 6.2.2 Desirable design principles

Following are desirable design principles for carpark layout design:

- design for a progressive reduction in speed environment in moving between the road and a parking space

- avoid dead-end aisles, and design for efficient and simple space search patterns
- avoid cross intersections
- ensure that aisles intersect circulation roads and circulation aisles as near to right angles as possible (intersection geometry is unlikely to be satisfactory at angles less than 75 degrees)
- provide a clearly defined pedestrian network that:
  - closely follows demand lines
  - ensures that pedestrian movements through carparking areas are along aisles rather than across them
  - minimises the potential for vehicular/pedestrian conflict
  - minimises likely vehicle operating speeds and congestion levels at the conflict points
  - provides for pedestrian and vehicular queues at the conflict points
- avoid long straights on circulation roadways, and large areas of open carparking that encourage high operating speeds and shortcutting when the carparking area is not full. Separators between parking rows are usually necessary
- restrict the maximum length of parking aisles to 100m, unless additional measures are adopted to ensure vehicle speeds are kept low
- within large developments, provide for relatively uncongested public transport and service vehicle movement through the site, without using parking aisles
- provide adequate site lighting, and avoid abrupt changes in lighting levels during both day and night operation
- provide adequate queuing areas for drive through facilities that will not block primary circulation roadways or site access driveways (occasional queuing in parking aisles is normally of little consequence)
- ensure on-site traffic congestion does not hinder satisfactory operation of the carparking facility
- ensure that the design of all storage areas, fire escapes, loading areas, refuse collection areas, etc. complies with the requirements of the overall project design
- speed humps should not be necessary in a well designed carparking area where speeds are controlled by circulation road and aisle geometry. If speed humps are provided, their profile should be as described in *Figure j*. Humps are not to be located in entry/exit queuing areas, intersection areas, or on curved roadways

- where at-grade parking areas are necessary or unavoidable, shade parking areas by trees that are selected, planted and maintained to achieve shade coverage of the carpark within ten years of its establishment. Refer to **Planting Species Planning Scheme Policy** for details of complying species
- shade trees are provided at the ratio of 1 tree for every 6 carparking spaces. One third of these trees are to be accommodated in larger unsealed areas instead of diamond shaped openings.

### 6.3 Location of carparking areas

Car parking spaces are to be located on the site so as to be more convenient to use than alternative on-street spaces. The provision of shelter or improved security can increase the attractiveness of on-site parking.

A minimum of 40% of the total site parking requirement, including all public and visitor carparking spaces, is to be clearly visible from the street, with the remainder becoming visible as entering vehicles move through the front carparking area first seen from the street. Public and visitor parking spaces are to be located closest to building entrances, while employee parking can be relatively more remote.

Parking spaces are not to be located inside security fences, in likely outdoor storage areas, in areas likely to be used for heavy vehicle manoeuvring (particularly opposite and adjacent to loading doors), or out of sight at the rear of the buildings.

### 6.4 On-site circulation

#### 6.4.1 General

Carparking areas are to be designed on the basis of a hierarchy of internal roadways that range from those primarily providing for vehicle movement, to those primarily providing for access to parking spaces. The descending order of roadway importance is to be: Circulation Roads, Circulation Aisles and Parking Aisles.

#### 6.4.2 Circulation roads

Circulation roads connect entry/exit driveways with circulation/parking aisles and so do not provide direct access to parking spaces. They also can provide for traffic circulating between carparking areas.

Minimum widths of straight circulation roads are to be in accordance with *Table 13*.

**Table 13 Minimum widths of straight circulation roads**

Type of circulation road	Width of circulation road
One-way, one-lane	3m (5m if over 20m long)
One-way, two-lane	6m
Two-way, one-lane <sup>(1)</sup>	5m (up to 25vph) 6.2m (up to 1000vph)
Two-way, two-lane	6.5m (101 to 300vph) 7.5m (over 300vph)

(1) Two-way usage of one-lane circulation roads is permitted in small, low turnover carparking areas where it can be demonstrated that:

- the two-way one-lane section is more than 15m from the footpath crossing
- any congestion generated will not extend onto the street
- it will operate at a satisfactory level of safety
- delays produced will not encourage parking in inappropriate locations elsewhere.

Dimensions are to be measured to nominal kerb faces with a clearance from the nominal kerb face of not less than 0.3m to obstructions higher than 0.15m (refer to *Figure k*). If a median is proposed, it should not be less than 0.6m wide, provided it can be clearly seen, and not less than 1.2m wide if it needs to carry signs.

Where a circulation road leading from a narrow driveway (less than 6m) is 30m or longer, or the sight distance from one end to the other is restricted, the driveway and circulation road are to be increased to a minimum of 6m wide for at least the first 6m inside the property boundary. Passing opportunities are to be provided at least every 30m on long driveways.

In circumstances where it can be expected that control facilities such as card readers or ticket machines are likely to be installed, the circulation road width is to be increased by 1.2m to make allowance for these devices.

Additional turning lanes are to be provided where necessary in carparking layouts of high traffic generating developments.

The dimensions in *Table 13* relate to the circulation roads' function as access roadways to carparking areas. Greater widths may be required to accommodate buses or service vehicles.

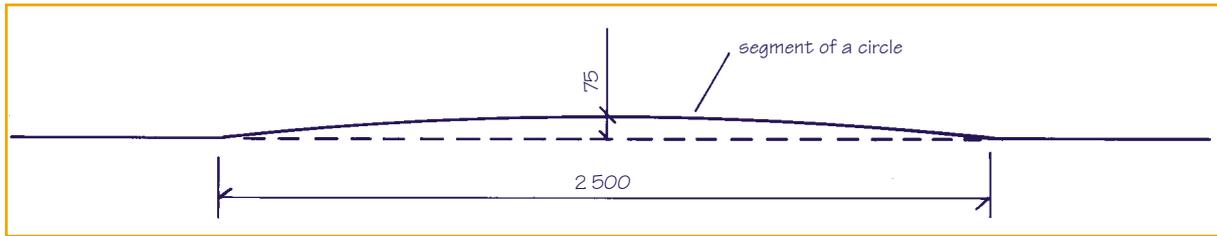


Figure j Speed hump

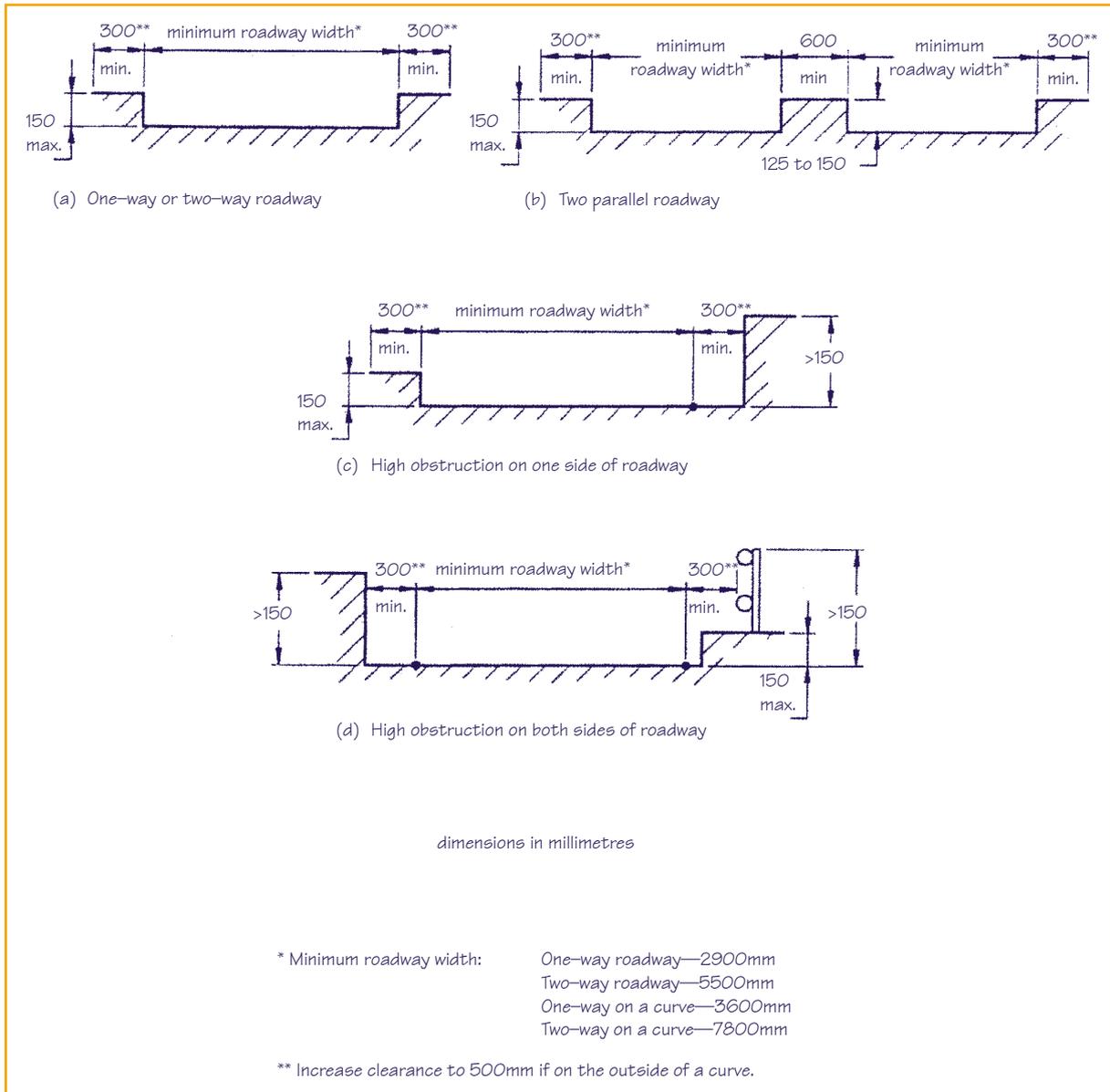


Figure k Circulation roadway and ramp cross-sections (Source: AS2890.1-1993)

Curved circulation roads and ramps are to have minimum dimensions in accordance with *Figure l*. Two-way curved circulation roads and ramps are to be separated by a median when the outer kerb radius (dimension  $R_o$  on *Figure l*) is 15m or less. A median is optional on larger radii curves.

### 6.4.3 Circulation aisles

Circulation aisles provide access to parking spaces and to other aisles.

In small, low turnover carparking areas typically having less than 50 spaces, two-way circulation aisles may be only 6.2m wide, but in all other design situations, they are not to be less than 6.5m wide. Circulation aisles are inappropriate in parts of larger carparking areas that have high turnover rates.

### 6.4.4 Parking aisles

Parking aisles provide access to parking spaces.

In general, all parking aisles are to provide for two-way traffic movement and have a minimum width of 6.2m. In restricting circumstances this width may be reduced with a corresponding increase in the width of the parking bays. Refer to *Figure m* for the relationship between parking aisle width and parking space width.

The minimum width of two-way parking aisles providing access to high turnover spaces of 2.7m wide is to be 7m.

Terminated aisles are to extend not less than 2m beyond the last parking space in the aisle to allow for manoeuvres into and out of that parking space, or alternatively an 8m aisle is to be provided directly behind the last parking space. Refer to *Figure n*.

The maximum length of parking aisles is to be 100m unless provision is made to ensure speeds are minimised.

One-way aisle arrangements will only be permitted where it can be satisfactorily demonstrated that a two-way aisle arrangement would be impracticable, and appropriate design will ensure one-way aisles will only be used for one-way traffic operation.

Two design situations necessitate consideration of turning vehicles: curved roadways and ramps, and the provision for turning movements at intersections. The standard of design adopted depends on the frequency of likely vehicular conflict between opposing streams of traffic.

Design standards appropriate for cars are set out in *Figure o*.

These curves and intersections are designed such that turning cars have no need to cross the centre line (whether marked or not) of circulation roads or circulation aisles, or parking aisles providing access to more than 50 parking spaces.

Where larger vehicles are expected to use curved and intersecting roadways and ramps, or where higher operating speeds are proposed, appropriate allowance is to be made by the provision of larger curves and appropriate widths of turning paths based on the turning templates in Section 7.2 of this Planning Scheme Policy.

## 6.5 Sight distance

The minimum sight distances at all areas of pedestrian/vehicle and vehicle/vehicle conflict is to be in accordance with *Table 14*.

Measurement of these sight distances is depicted in *Figure p*.

No reversing of vehicles, particularly service vehicles, is to occur in areas of high pedestrian activity.

**Table 14 Minimum sight distances at conflict points**

Location of conflict point	Minimum site distance	
	for pedestrians	for vehicles
Circulation roads	3.0m	20m
Circulation aisles	2.5m	15m
Parking aisles	2.0m	10m
At two-way right angle turns	—	10m

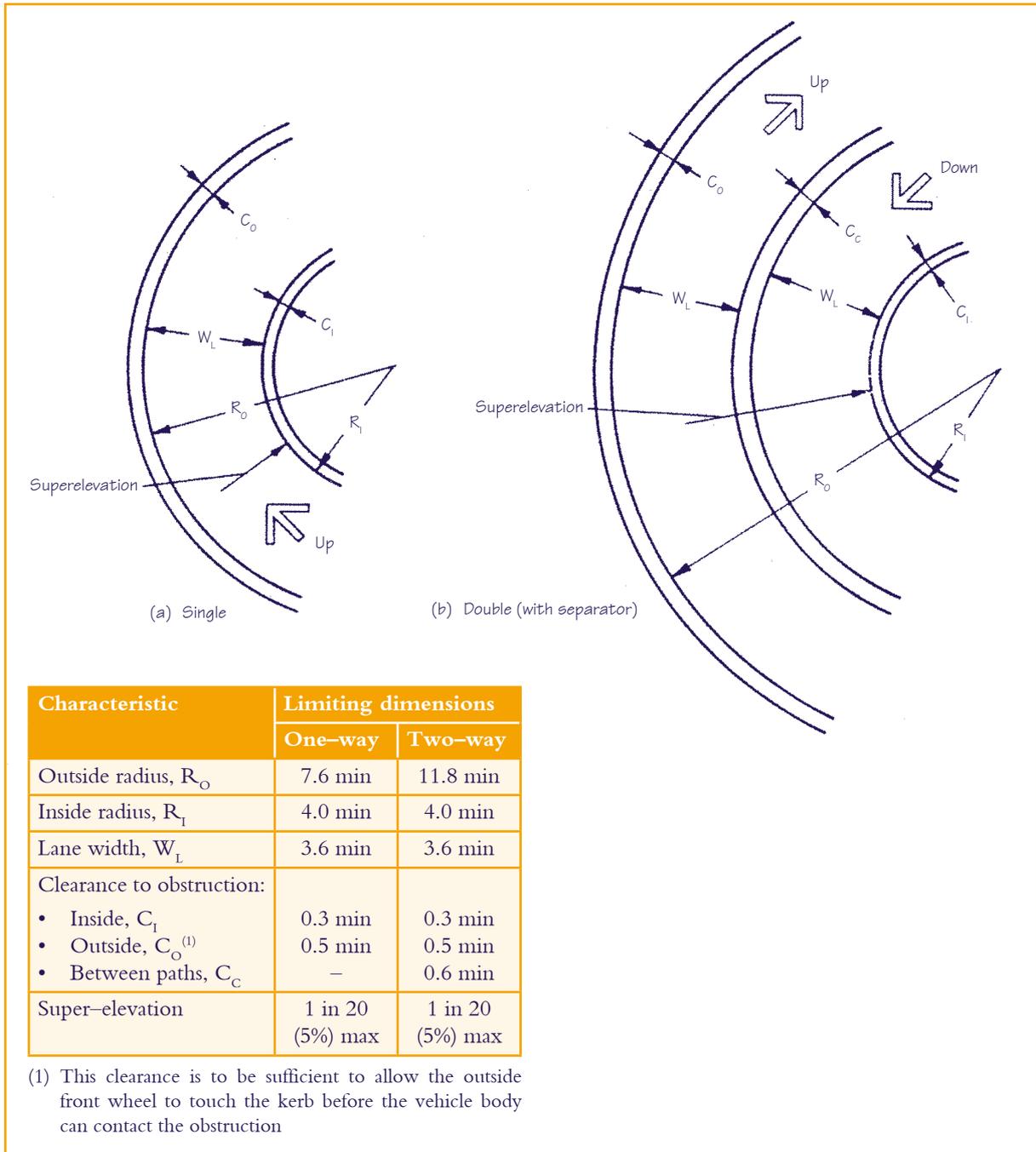


Figure 1 Dimensions of curved circulation roadway and ramps (Source: AS2890.1-1993)

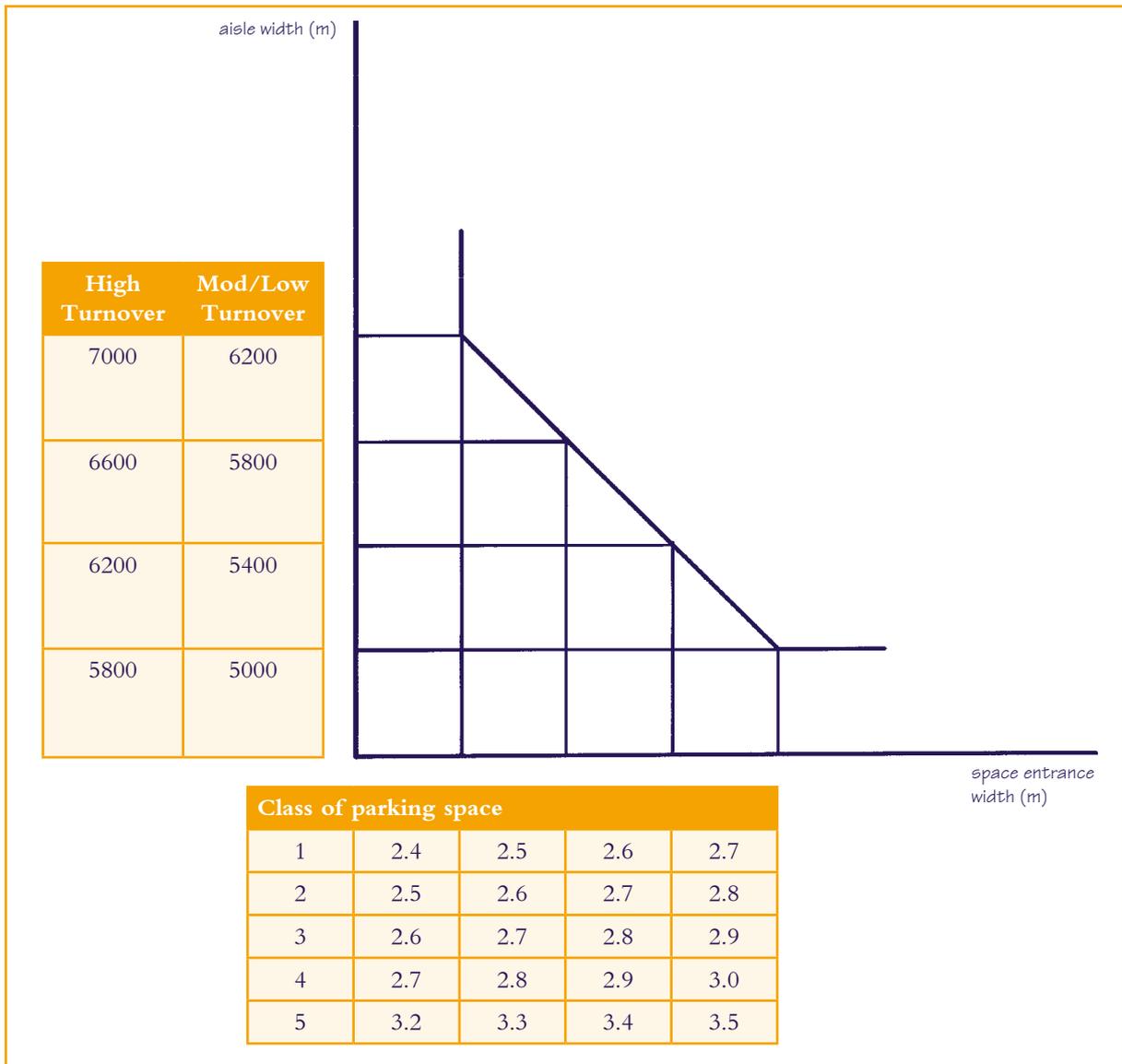


Figure m Relationship of aisle width to space entrance width

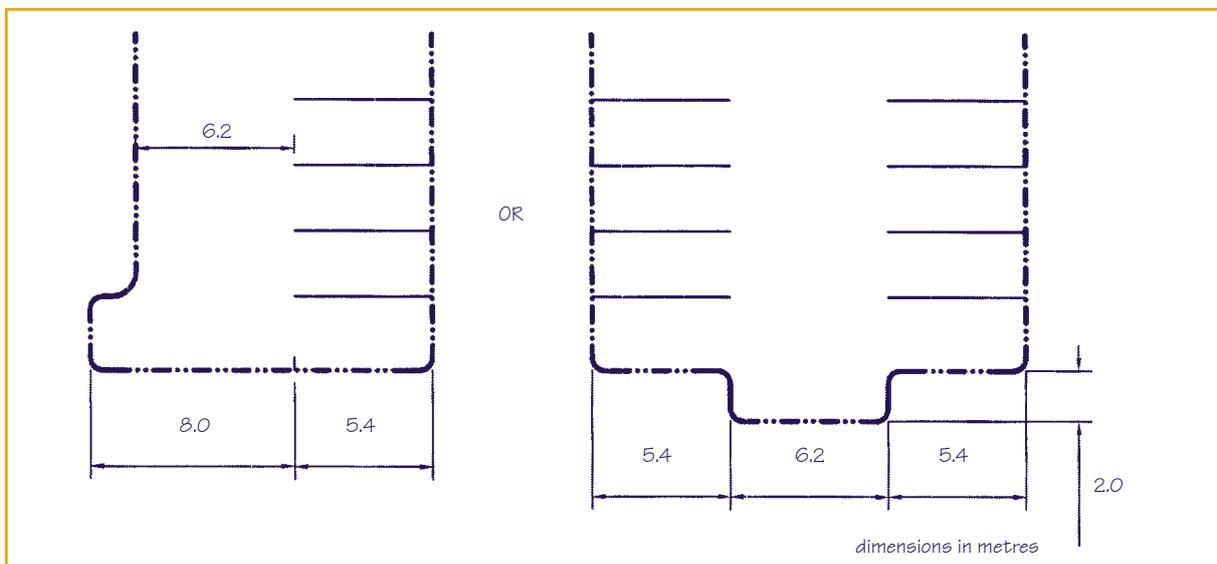


Figure n Terminated aisle treatments

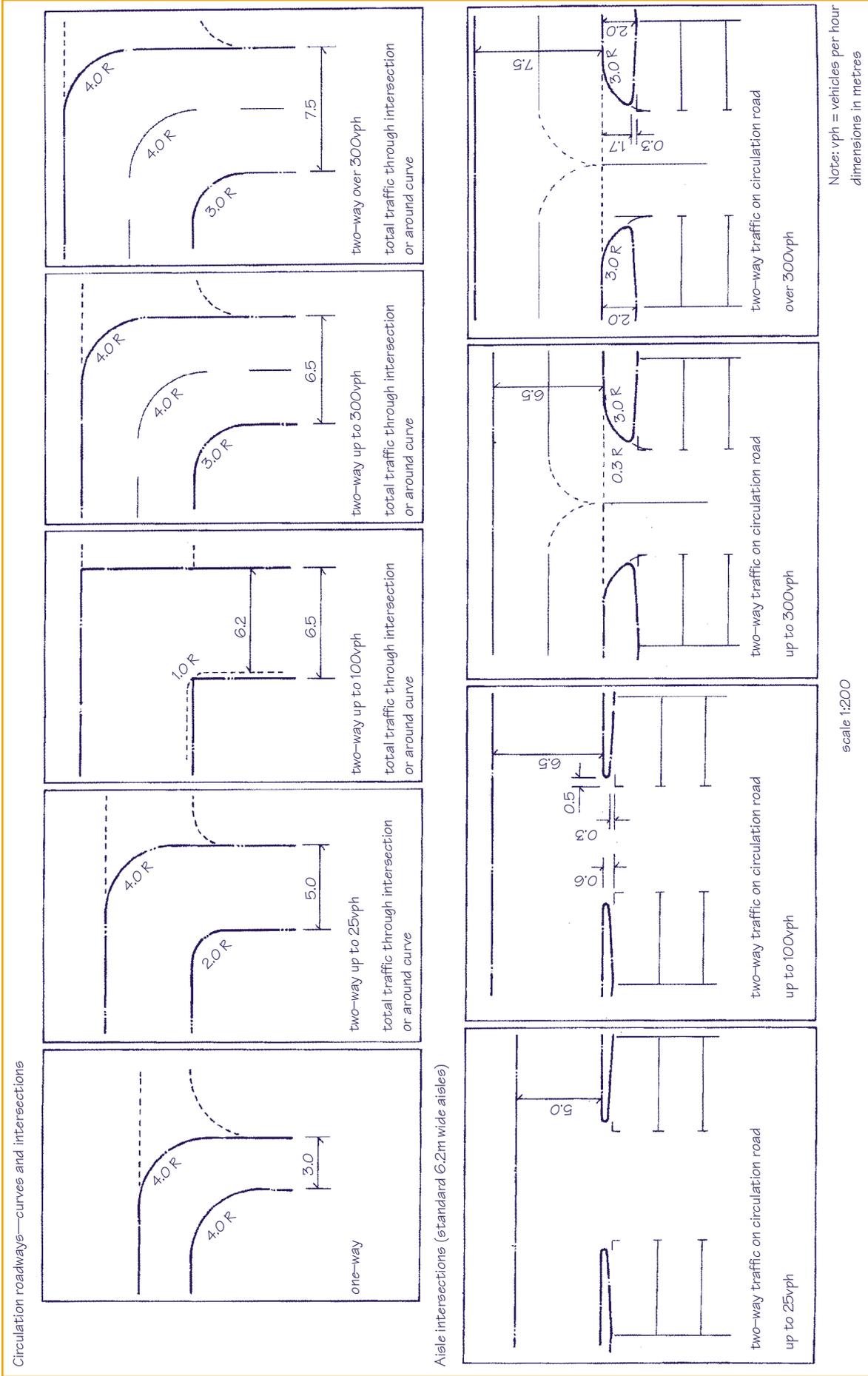


Figure 0 Provisions for turning vehicles

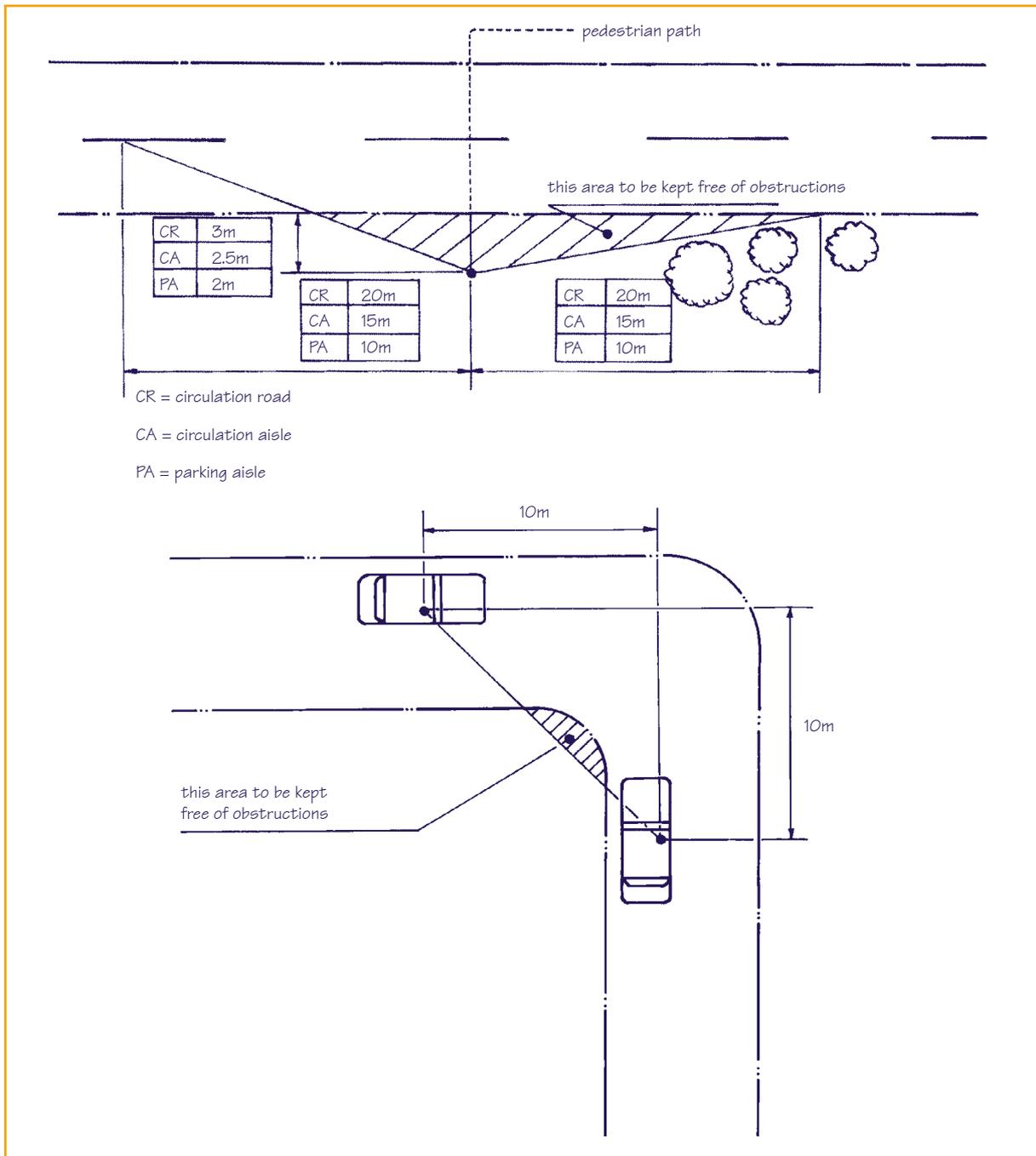


Figure p Locations of sight lines at conflict points

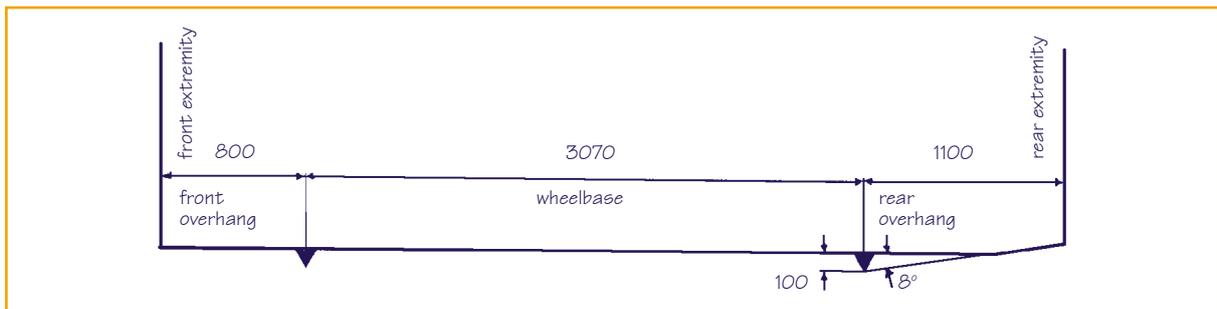


Figure q Transition and change of grade template (Source: AS2890.1-1993)

## 6.6 Gradients

Minimum gradients of carparking areas are defined by drainage requirements, and depend on the type of surface and its roughness (refer to *AS2890.1—Parking Facilities*).

Maximum gradients are defined by consideration of vehicle performance, user comfort, likely operating speeds and, in some cases, the control of opening car doors and the manoeuvrability of prams, wheelchairs and shopping trolleys.

Desirable maximum gradients are shown in *Table 15*. Gradients are defined for the purposes of this section as the maximum total gradient incorporating longitudinal and transverse components.

The component of the gradient in the carparking area across parking spaces is not to exceed 1 in 20 (5%). If gradients steeper than this are encountered, some large car doors become difficult to control and minor damage to cars may result.

At changes of grade of 1 in 12.5 (8%) or more, a transition is to be provided with length in metres equal to one fifth of the percentage change of grade. The transition can be straight or a vertical curve, the latter providing better user comfort. At changes of grade, the required clear height is to be maintained at all points.

All transitions and change of grade are to be checked by use of the template and method shown in *Figure q*.

**Table 15 Maximum gradients**

Location	Maximum gradient
Parking areas for people with disabilities	1 in 40 (2.5%)
Parking spaces, circulation and parking aisles in:	
Public carparking area (prams and shopping trolleys likely)	1 in 15 (6.7%)
Tenant carparking area in residential building	1 in 15 (6.7%)
Public carparking area (prams/trolleys likely)	1 in 12 (8.3%)
Employee carparking area	1 in 10 (10%)
Straight circulation road or ramp	1 in 6 (16.7%)
Curved circulation road or ramp (at inside kerb)	1 in 6 (16.7%)
Circulation road or ramp (at inside kerb)	1 in 6 (16.7%)
Circulation road, ramp or driveway within 6m of a property boundary, traffic control point or marked pedestrian crossing	1 in 20 (5%)
Uphill queue area	1 in 12 (8.3%)
Super-elevation on curved roadway or ramp camber	1 in 12 (8.3%)

## 6.7 Height clearance

### 6.7.1 General requirements

To permit access for all vehicles expected to use the carparking area, the minimum clear height between the floor and any overhead obstructions is to be 2.3m. The minimum clear height, as measured to the lowest appurtenance on the ceiling, e.g. fire sprinklers, services, lighting fixtures and signs, is to be appropriately and clearly signed.

Where arrangements are made to divert over height vehicles within the carparking area, the minimum headroom is to be no less than 2.1m. The reduced height and alternative route are to be clearly signed.

Particular attention is to be paid to the headroom available at the beginning or end of a ramp, due to the reduction in clear height that occurs when a car bridges the change of grade.

### 6.7.2 Height clearance for disabled user spaces

Disabled carparking spaces are to have a minimum height clearance of 2.5m extending from the open end of the bay to a point not less than 2.16m from the front of the bay. Refer to *Figure r*.

## 6.8 Carparking spaces

### 6.8.1 Widths of parking spaces

The minimum widths of carparking spaces are indicated in *Table 16* for the types of carparking area users described. These widths are based on considerations of door opening requirements and frequency of use.

Parking areas that are shared by different categories of users have spaces of the greatest width required by any of the user types.

Different carparking areas on the one site can provide for different categories of users, provided the user types are adequately and clearly separated, e.g. an employee carparking area may have narrower spaces than a visitor carparking area on the same site.

In fully reserved carparking areas, up to 20% of spaces may be small car (50th percentile) spaces, provided such spaces are no smaller than 5m long by 2.3m wide and are appropriately signed as being for small cars only.

Some spaces, particularly those near entry/exit driveways and where aisle widths are constrained, may need to be wider (up to 3.5m) to allow satisfactory access to the space, since such spaces can only be practically approached by a vehicle making a minimum radius turn. The relationship between aisle width and space entrance width is shown in *Figure m*.

If the side boundary of a space is adjacent to an obstruction greater than 150mm high and placed so as to restrict doors from opening, 0.3m is to be added to the width of the space.

**Table 16 Minimum space widths**

Class of space	Minimum width of space (mm)	User types
1	2.4	Reserved parking with low turnover rates, such as employee carparking areas at industrial and commercial premises
2	2.5	Public carparking areas with low turnover rates, such as central city carparking areas, sporting venues, etc.
3	2.6	Public carparking areas with moderate turnover rates, such as suburban shops and medical centres
		Reserved spaces where passengers and goods can be expected to be loaded or unloaded, such as tenant carparking areas in residential buildings
		Visitor parking at commercial, industrial and residential premises
4	2.7	Small public carparking areas with high turnover rates (typical duration of stay 30 minutes or less), particularly shopping centres up to 1,000m <sup>2</sup> GFA, kiss'n'ride areas, fast food stores etc.
5	3.2	Parking spaces reserved for people with disabilities

### 6.8.2 Lengths of parking spaces

Except for small car spaces and parallel parking spaces, all bays are not to be less than 5.4m long.

Tandem parking spaces (combined length of 10.8m) are not appropriate in visitor or public parking areas, but may be acceptable in the following situations:

- residential developments where both spaces are attached to one unit
- reserved carparking areas where both spaces are allocated to a single tenant.

Fully enclosed spaces are 0.6m longer to allow for pedestrian access around the vehicle with the garage doors closed.

Wheel stops can be used, so long as they do not cause parked vehicles to extend into the aisle. They are to be located 0.5m from the closed end of the parking space, with no obstructions higher than 150mm within the 0.5m overhang area. Pedestrian areas are to be set back at least 1m from the face to the stop. The area of overhang cannot be considered to form part of the landscaped area, whatever the surface treatment.

The normal length of a parallel parking space is 6m, this length being reduced to 5.4m if the space is at the open end of the row of spaces, or increased by 0.3m if closed by a kerb at one end, and by 0.6m if closed by a kerb at both ends. Lengths of parallel parking spaces are depicted diagrammatically in *Figure s*.

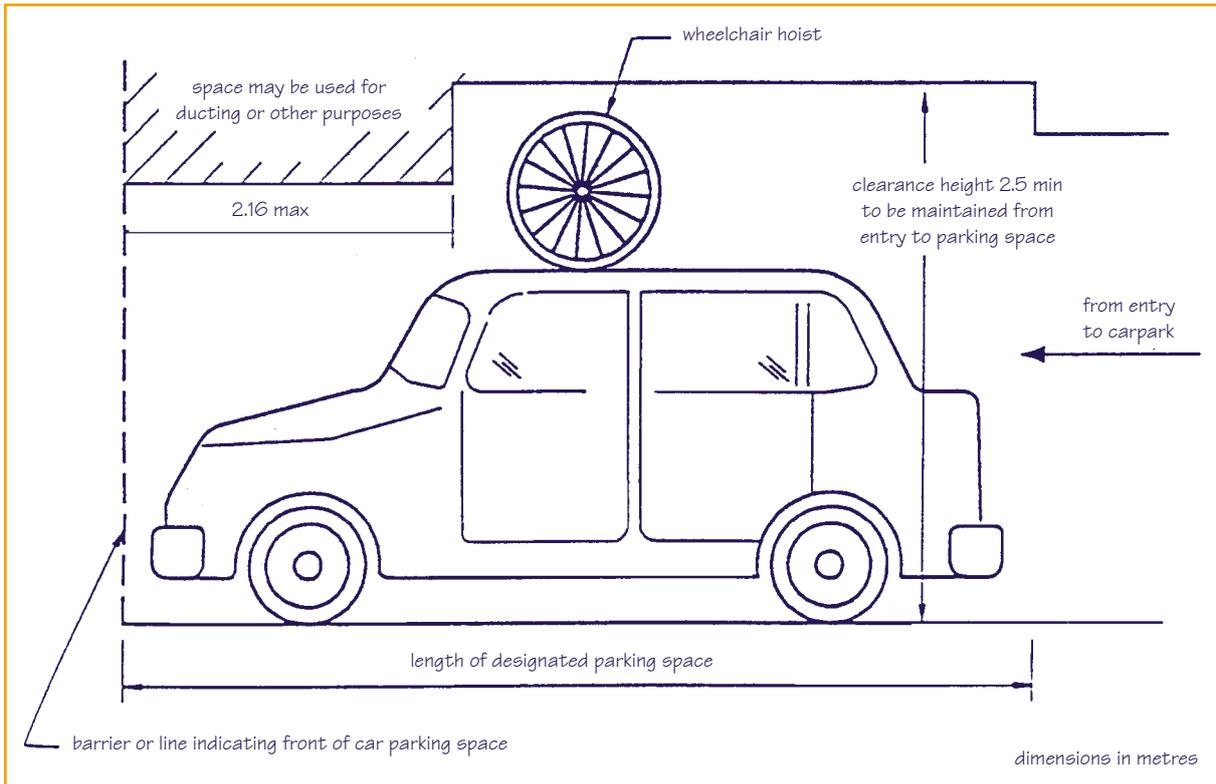


Figure r Vertical clearance required above car spaces for people with disabilities (Source: AS2890.1-1993)

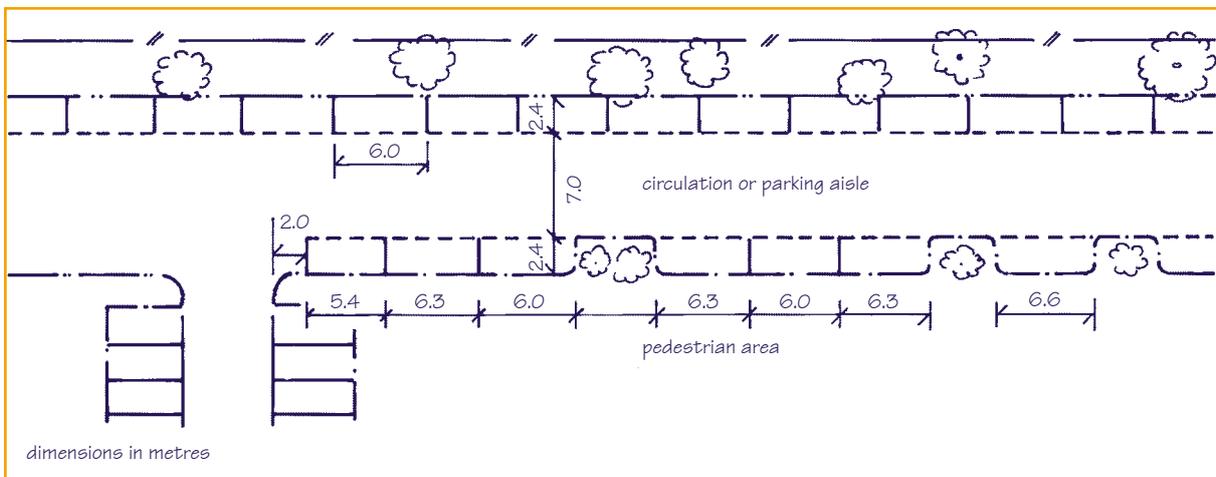


Figure s Parallel parking

### 6.8.3 Fully enclosed garages

For detached housing or similar developments where straight entry into the garage is possible, the garage is to have minimum internal dimensions of 6m by 3m with a minimum doorway opening of 2.4m.

In situations where there is insufficient manoeuvring space for the design vehicle in front of the garage to allow straight entry, the garage is to have minimum internal dimensions of 6m by 3.2m with a minimum doorway opening of 3m. A reduction of doorway and garage widths will be considered where the garage is set back a significant distance from the access aisle to provide a greater manoeuvring area in front of the garage that will enable the design vehicle to achieve a straight entry.

Intrusions into the garage area will only be allowed in areas shown in *Figure t*.

Tandem garages are to have a minimum internal length of 11.4m.

### 6.8.4 Clearance around parking spaces

All parking spaces are to be basically rectangular in shape. However, there may be some intrusions into the rectangular form of the parking space by columns or other structures, provided that such intrusions are at the closed end of the space and within defined limits. Additional areas outside the rectangular form are to be clear of structures to allow for door openings and the turning manoeuvre into the space. The allowable intrusions and the additional clearance areas, which may be an unoccupied part of an adjacent space, are shown in *Figure t*.

In most carparking areas, provision is made for door openings on both sides of the vehicle. However, in permanently reserved, long term employee carparking areas for industrial and commercial uses, provision may be made for door openings on one side only.

### 6.8.5 Designated parking spaces

Where parking spaces have been specially provided for a designated vehicle class or category of user, they are to be clearly signed to indicate that specific vehicle class or user, e.g. visitor parking, people with disabilities, taxis, motorcycles or bicycles. Standard symbolic messages are preferred where appropriate.

## 6.9 Provisions for vehicle occupants with disabilities

Provision of parking and general access is to be made in accordance with the requirements of *Australian Standards AS1428* and *AS2890.1*, particularly for

parking space width and location, manoeuvring areas for wheelchairs, gradients, location of stairs, ramps, doorways and signage.

The demand for these additional requirements varies with land use/development type. Generally, parking spaces for vehicle occupants with disabilities are to be provided at a rate of 1 space per 100 ordinary parking spaces, except for the development types listed in *Table 17*, for which the number specified is shown. In all cases, a minimum provision of one space will be required.

**Table 17 Number of parking spaces for vehicle occupants with disabilities**

Development	Size	Number of disabled parking spaces
Business	All	1/4,500m <sup>2</sup> GFA
Bank	All	1
Restaurant	All	1/300m <sup>2</sup> GFA

Furthermore, there are requirements contained within the Building Code of Australia for the provision of car parking spaces for people with disabilities, together with requirements for appropriate signage. Refer to D3.5 of Volume 1 of the BCA

GFA = gross floor area

## 6.10 Typical carpark layouts

Refer to *Figures u to aa*.

# 7 Design vehicles and vehicle turning templates

## 7.1 Design vehicles

### 7.1.1 Cars

The design vehicles used throughout the carparking sections of these guidelines are designated small, medium and large cars. They correspond to cars having critical dimensions approximating to 50th, 85th and 99th percentile dimensions respectively, derived from *AS2890.1*, and the research on which it was based. The critical dimensions of these vehicles are contained in *Table 18*.

These composite design vehicles do not necessarily correspond to a particular car, e.g. an actual car with a 50th percentile length is likely to be lower than the 50th percentile height dimension. Nevertheless, the composite dimension vehicles are considered to be quite appropriate for design purposes.

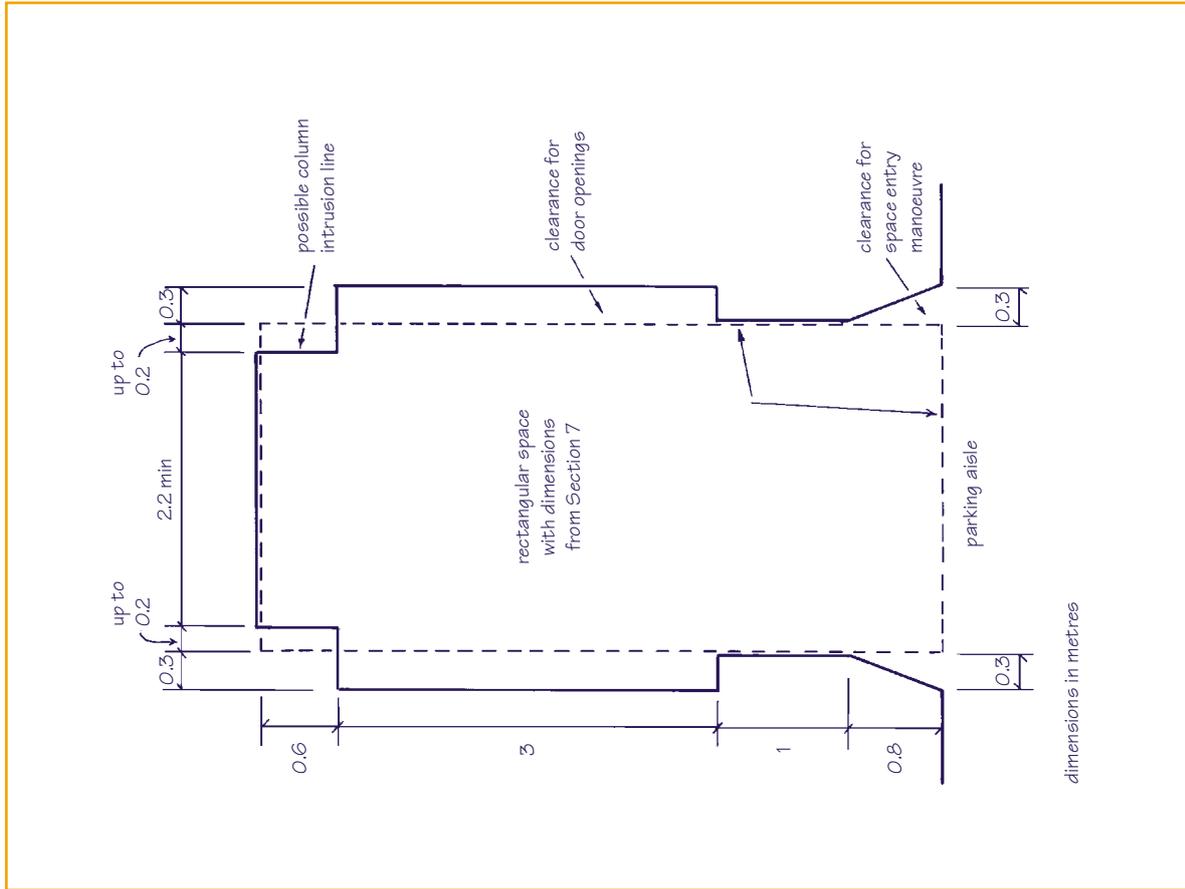


Figure t Clearances around carparking space

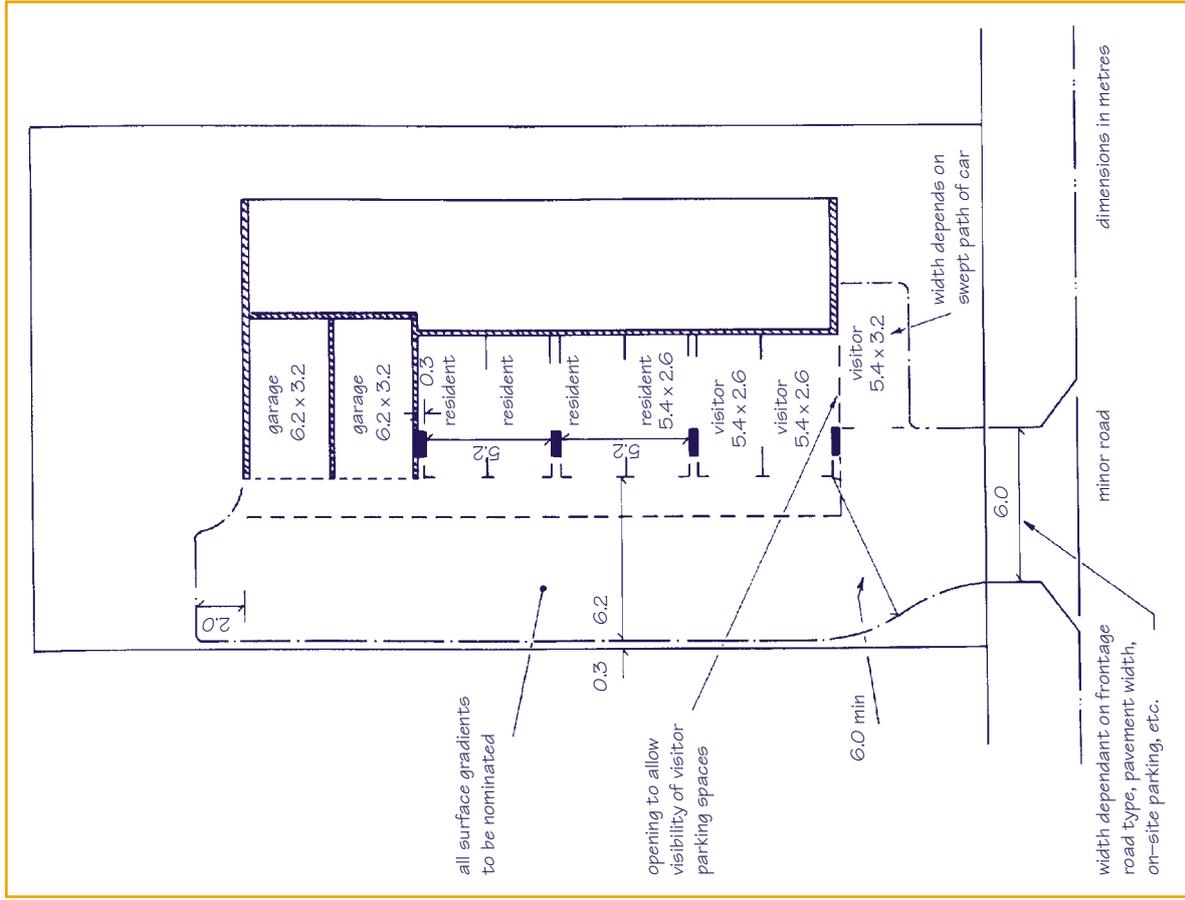


Figure u Typical layout: multiple dwelling

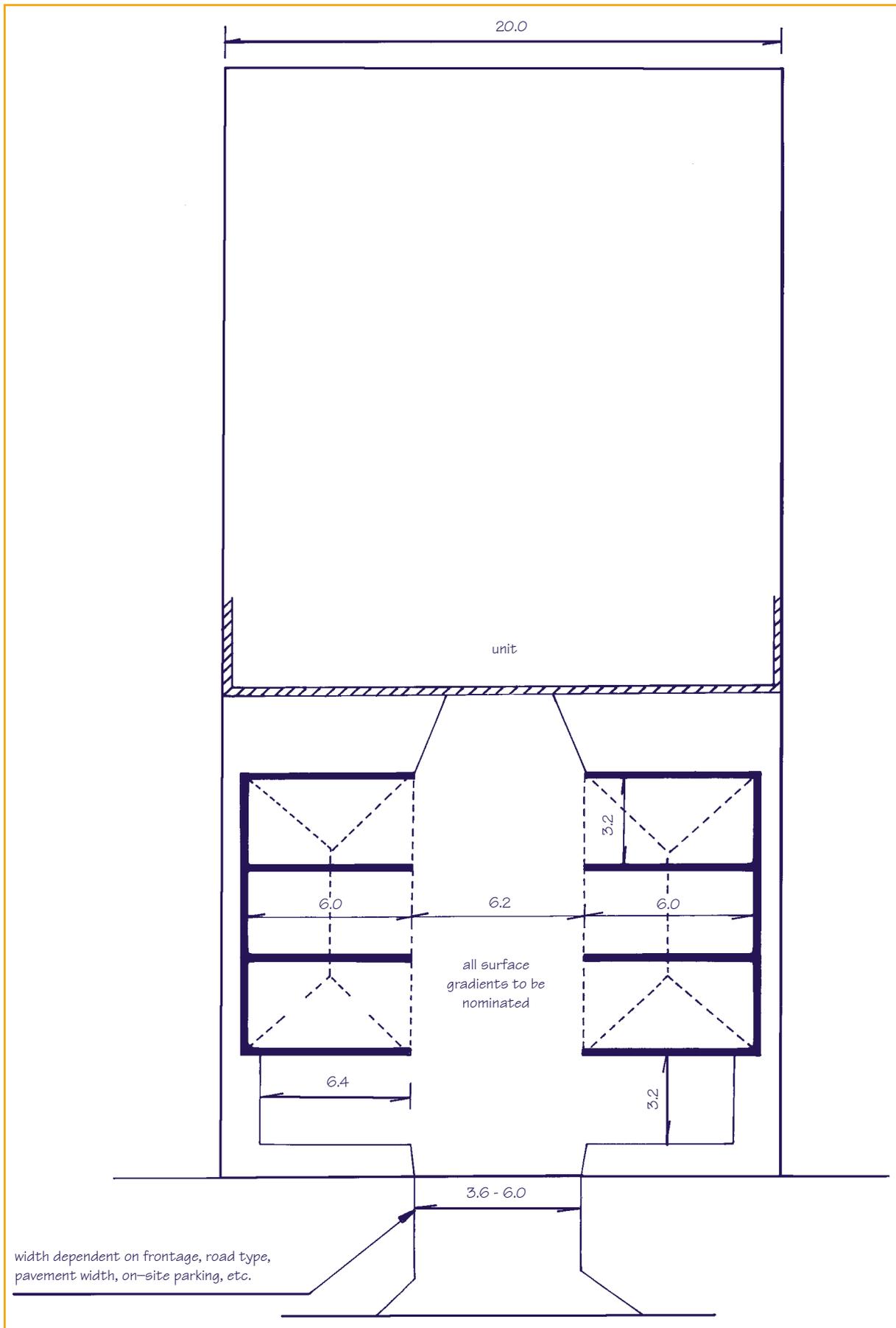


Figure v Typical layout: multiple dwelling

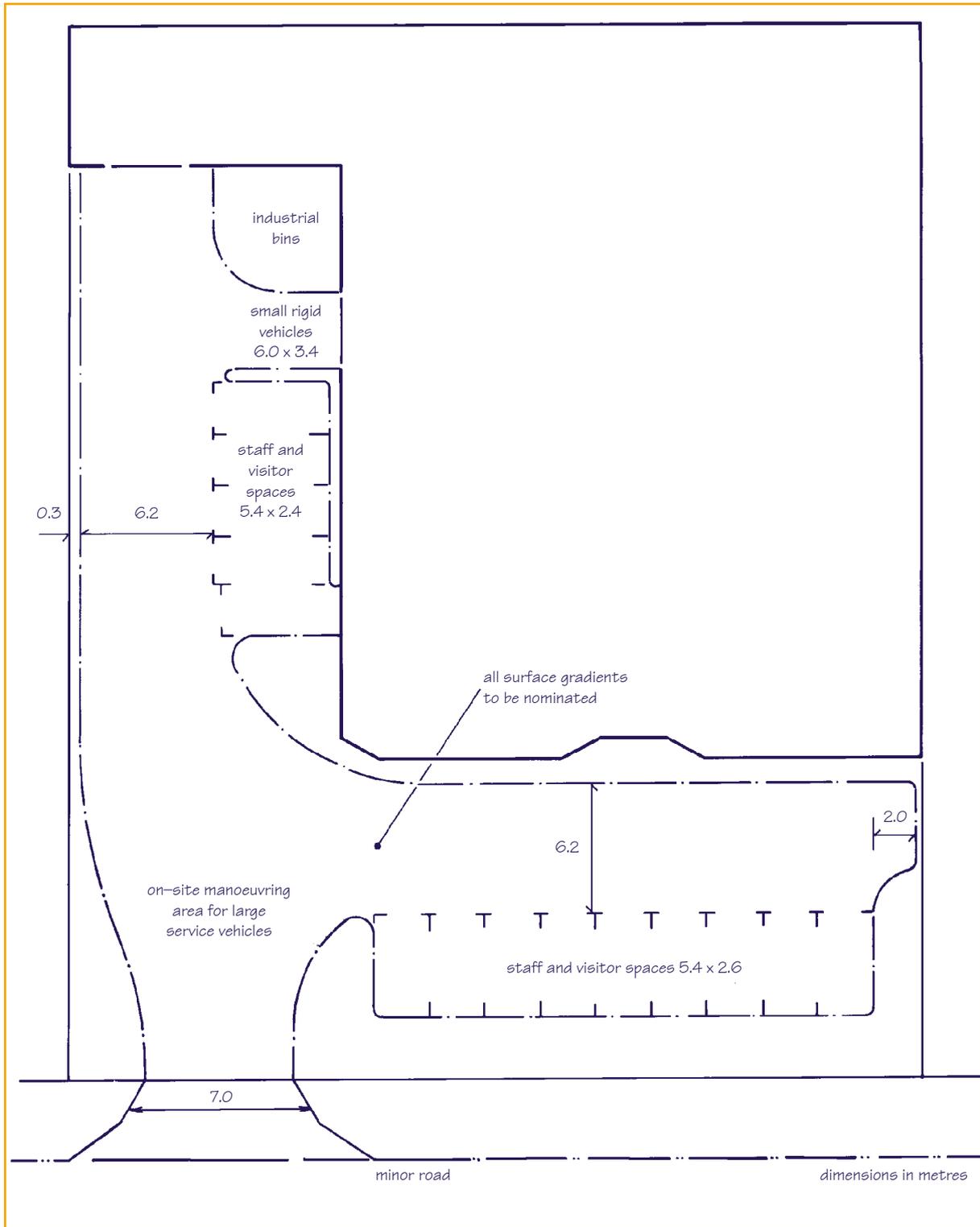


Figure w Typical layout: small industrial development

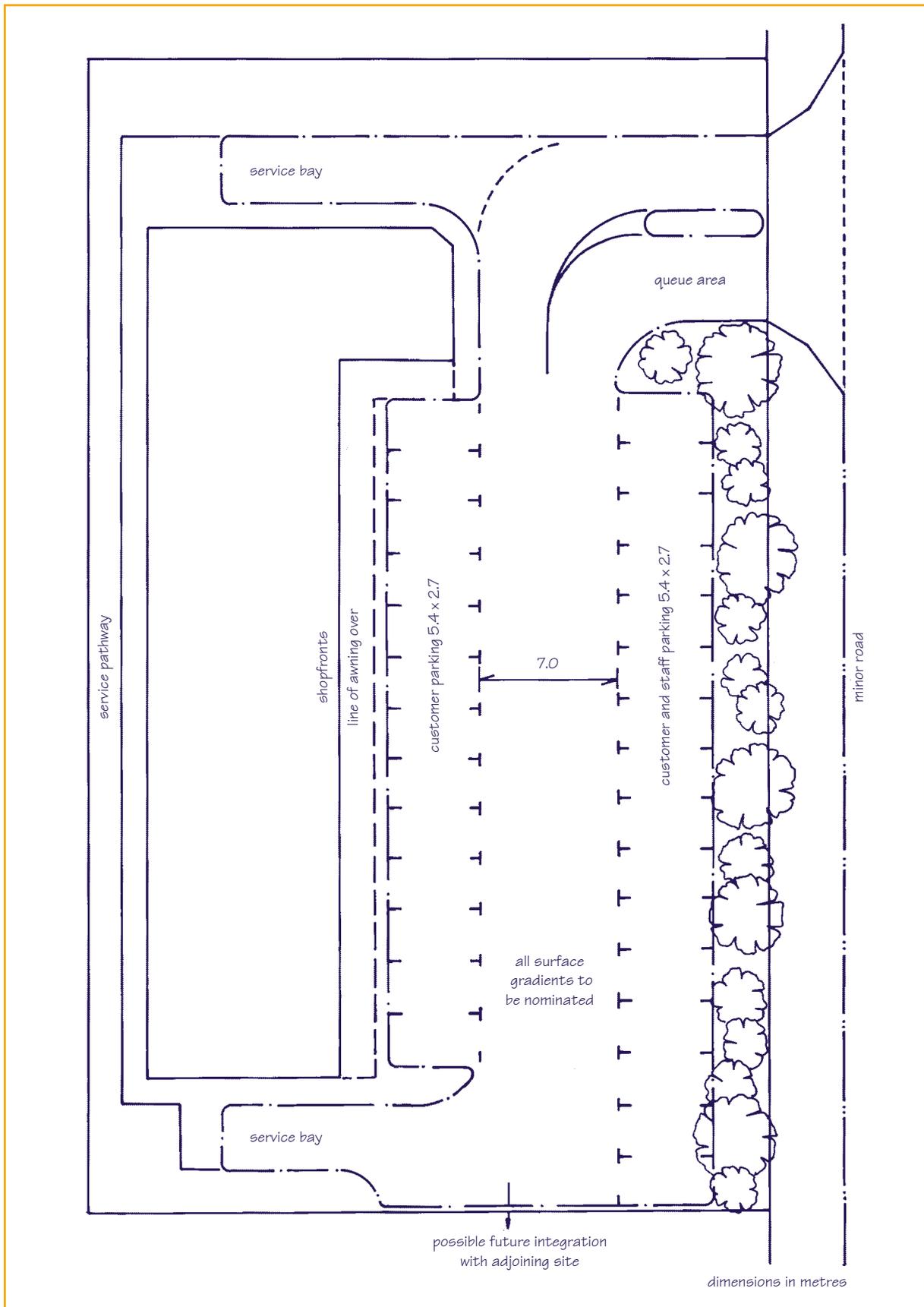


Figure x Typical layout: small retail development

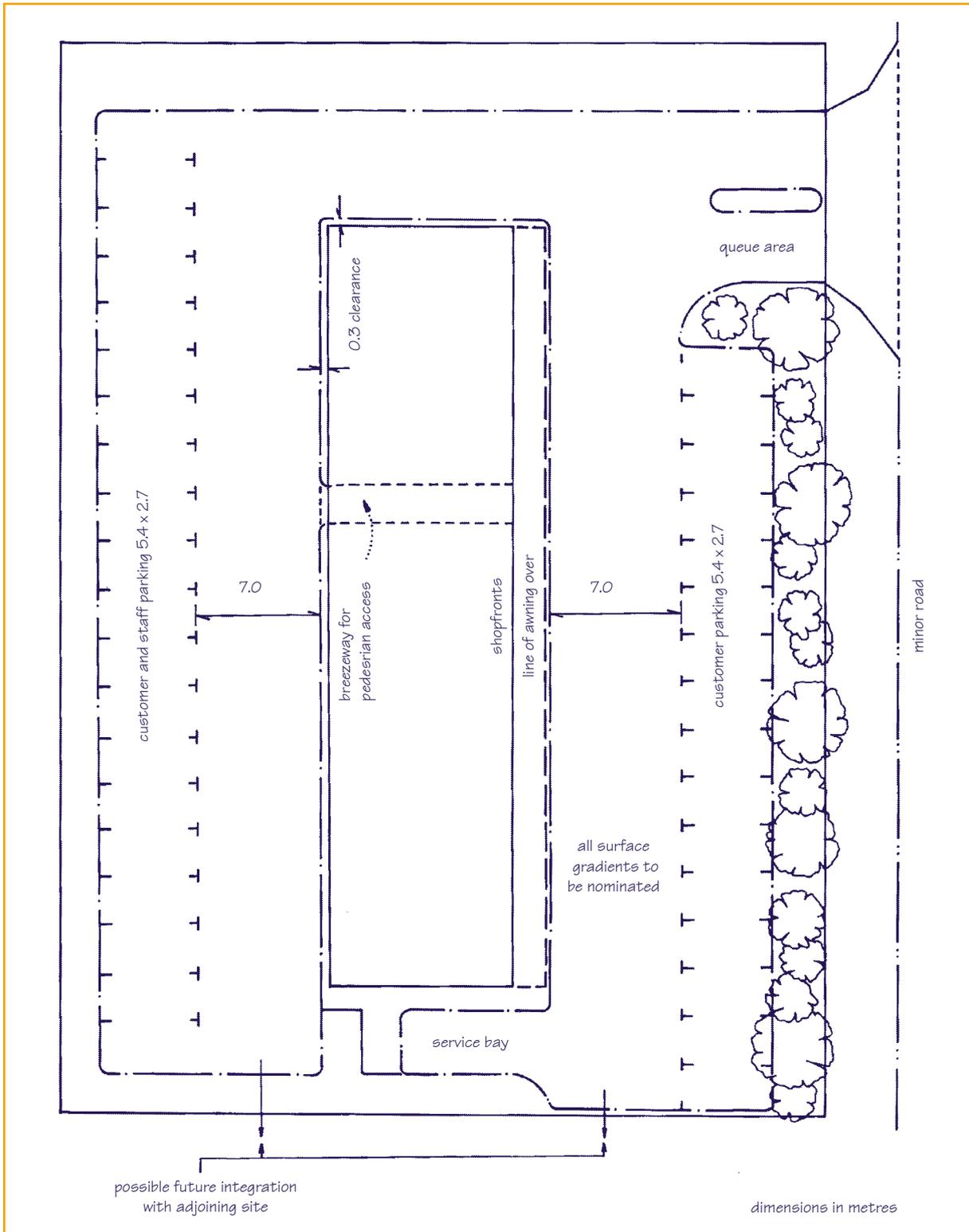


Figure y Typical layout: small retail development

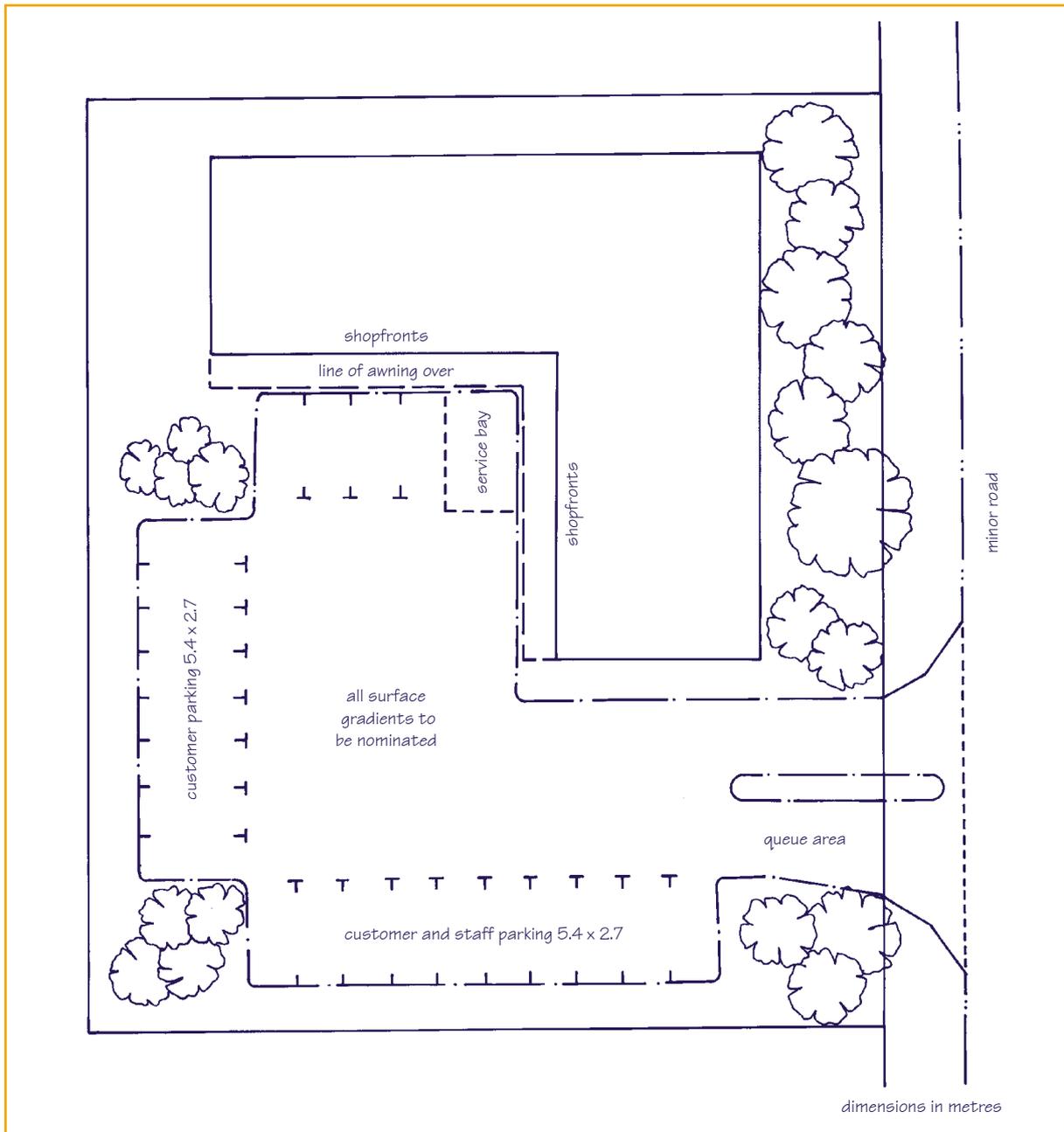


Figure z Typical layout: small retail development

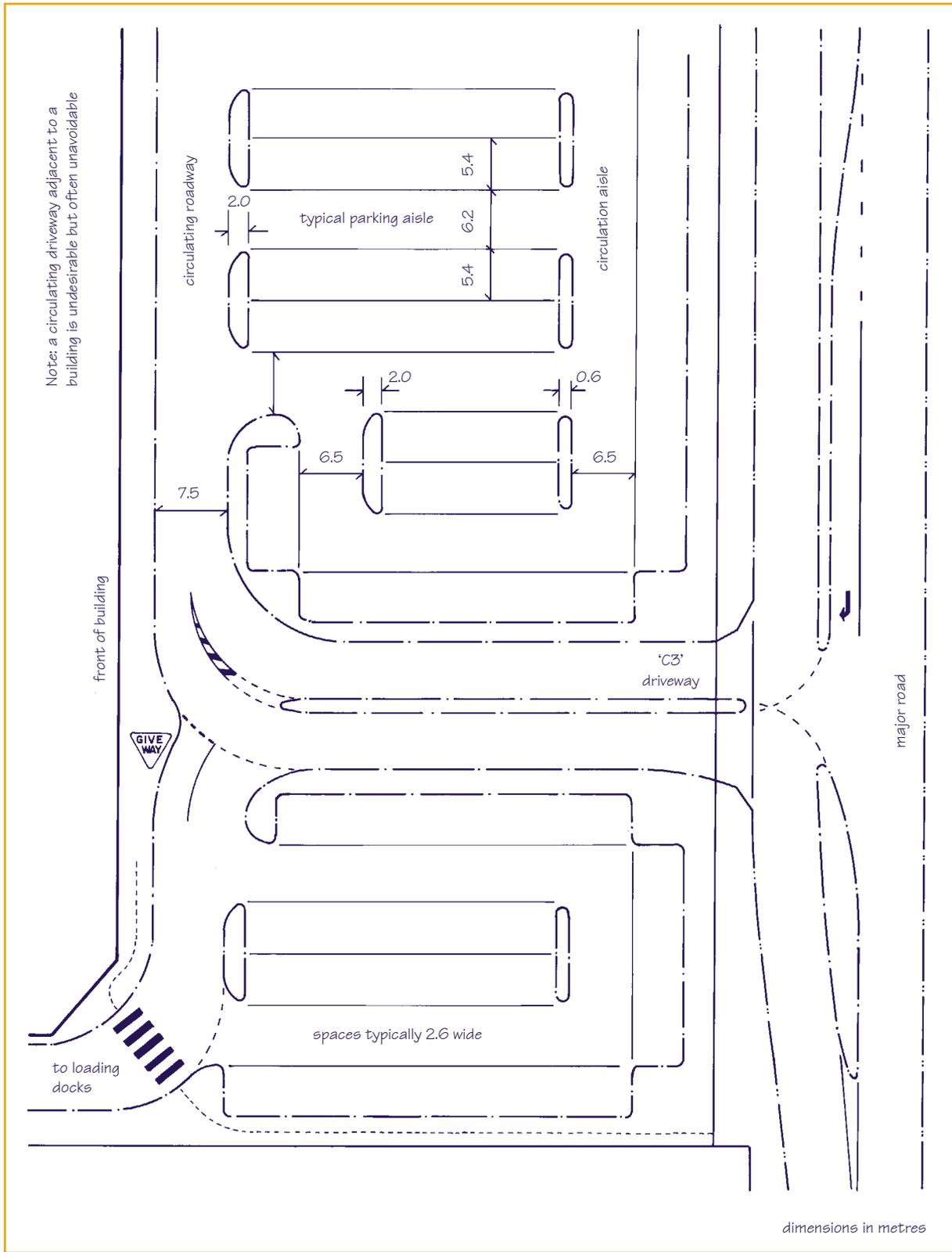


Figure aa Typical layout: large retail development

**Table 18 Critical dimensions of adopted design vehicles**

Dimensions <sup>(1)</sup>	Small car	Medium car	Large car
Length	4,450	4,740	5,370
Width	1,660	1,860	1,960
Height (determined by van heights) <sup>(2)</sup>	1,900	2,100	2,300
Wheelbase	2,540	2,820	3,070
Front overhang	813	813	996
Rear overhang	1,100	1,100	1,300
Track	1,400	1,530	1,560
Minimum turn radii			
At outside of body	5,560	6,600	6,900
At outside of front wheel	5,100	6,100	6,400
Minimum approach angle <sup>(3)</sup>	10°	10°	8°
Minimum departure angle <sup>(3)</sup>	8°	8°	8°
Central ground clearance <sup>(3)</sup>	140	140	100
Maximum swept path width	2,800	3,000	3,000
Manoeuvring template figure number	ac	ad	ae

All dimensions in millimetres

- (1) Critical dimensions do not all apply to particular vehicles.
- (2) Vehicle heights all reflect van heights in current usage, the 99th percentile height including provision for a roof rack.
- (3) Refer to *Figure ab* for definition of these dimensions.

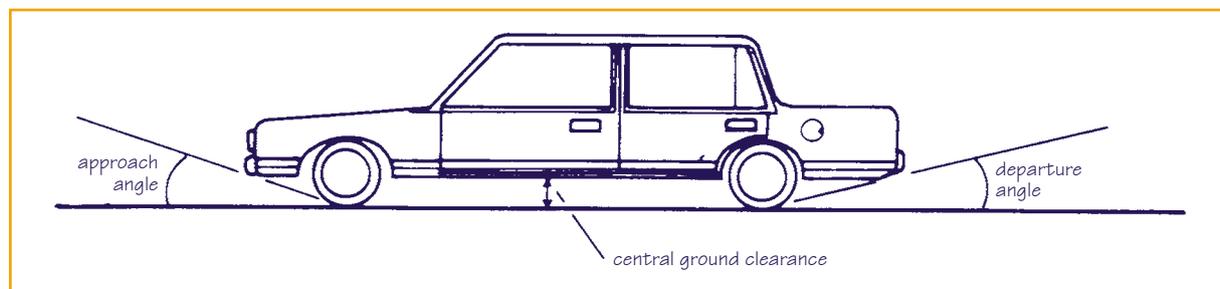


Figure ab Design car definitions

### 7.1.2 Service vehicles

The origins of the design vehicles selected for use in the service vehicle sections of this Planning Scheme Policy are described in *Table 19*.

## 7.2 Vehicle turning templates

These templates are intended for use in the preparation of internal designs. The design of external roadways and intersections will generally be to the appropriate standards of Council, Department of Main Roads or AUSTRROADS.

### 7.2.1 Cars

The different design cars will be used in different design situations, as appropriate, and as described in these guidelines.

Generally, the small car is to be used for the design of facilities for small cars, the medium car for the design of normal parking spaces and aisles, and the large car for the design of access roadways. The relevant turning path templates are shown in *Figures ac to ae*. These templates show an additional area required to provide clearance to obstructions. The vehicle paths are inappropriate for design purposes without allowance for working clearances.

**Table 19 Design vehicles**

Design vehicle	Figure number	Description/type
C&T	af ag	Car and Trailer, equivalent to AUSTRROADS ‘Car and Caravan’, or similar to the Department of Harbour and Marine ‘Car and Boat Trailer’
VAN	ah ai	A 99.8th percentile vehicle equivalent to the Council’s ‘large car’
SRV	aj ak	Small Rigid Vehicle as in <i>AS2890.1</i> , but incorporating a body width of 2.33m
MRV	al am	Medium Rigid Vehicle equivalent to Council’s 8 tonne truck
LRV	an ao	Large Rigid Vehicle described by <i>AS2890.1</i> as Heavy Rigid Vehicle
RCV	ap aq	Industrial Refuse Collection Vehicle
COACH	ar as	Inter–City 12.2m Tourist Bus from AUSTRROADS
AV	at au	17m Articulated Vehicle from AUSTRROADS
DRCV	av	Domestic Refuse Collection Vehicle included for on street design purposes

### 7.2.2 Service vehicles

Provision for service vehicles in commercial developments is based on the operational requirements of those vehicles. Such requirements are based on vehicle turning paths for which design templates can be derived and are provided. Relevant templates are shown in *Figures af to av*.

A minimum horizontal clearance (prescribed below) is to be provided outside the vehicle extremities when applying the templates to a plan drawing. The templates are divided into two sets:

- turning templates for access driveway and access way design. These are based on the swept path of the vehicle at a speed higher than stalling speeds. A clearance for varying vehicle characteristics and driver judgement and skill of 0.5m is to be allowed when using the templates
- manoeuvring templates for service area design. These are for manoeuvres undertaken at stalling or minimum speeds. A clearance of 0.3m to all permanent obstructions is to be allowed when using the templates.

In situations where complex manoeuvres are required by large vehicles in restricted areas, the designer is to conduct field trials to establish the manoeuvring areas required and engage the services of an experienced professional engineer.

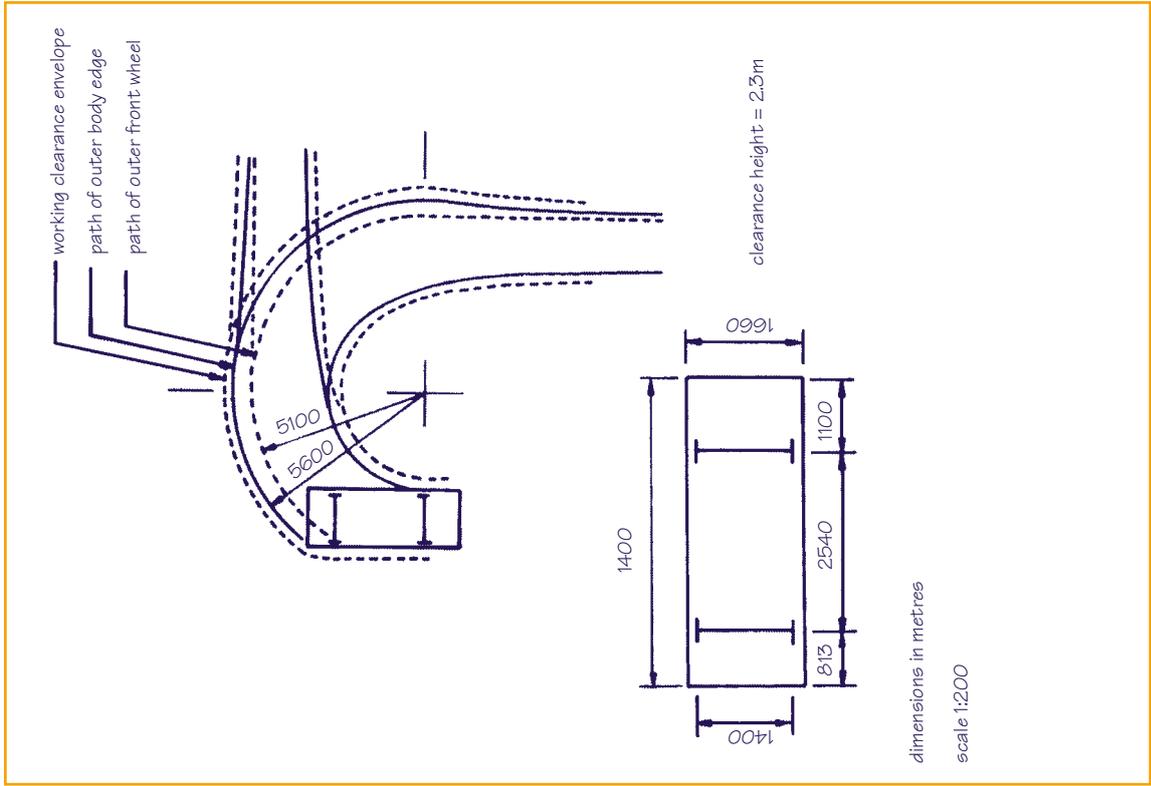


Figure ac Manoeuvring template: small car 5.1mR

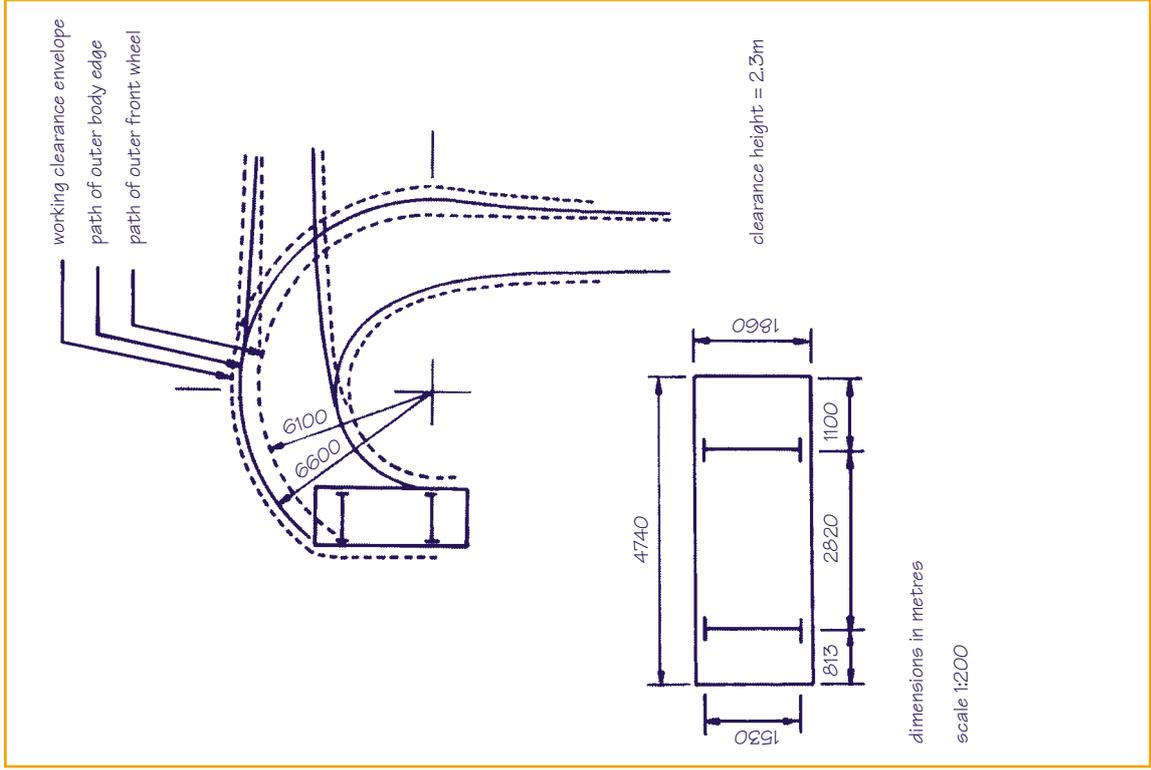


Figure ad Manoeuvring template: medium car 6.1mR

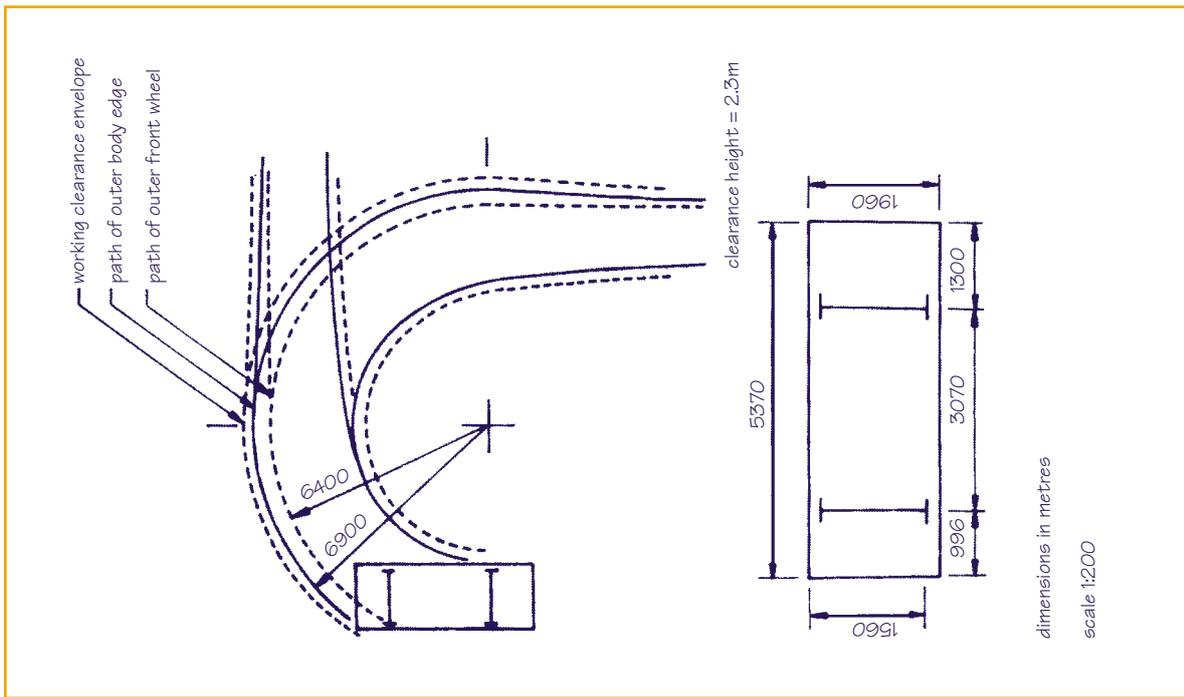


Figure ae Manoeuvring template: large car 6.4mR

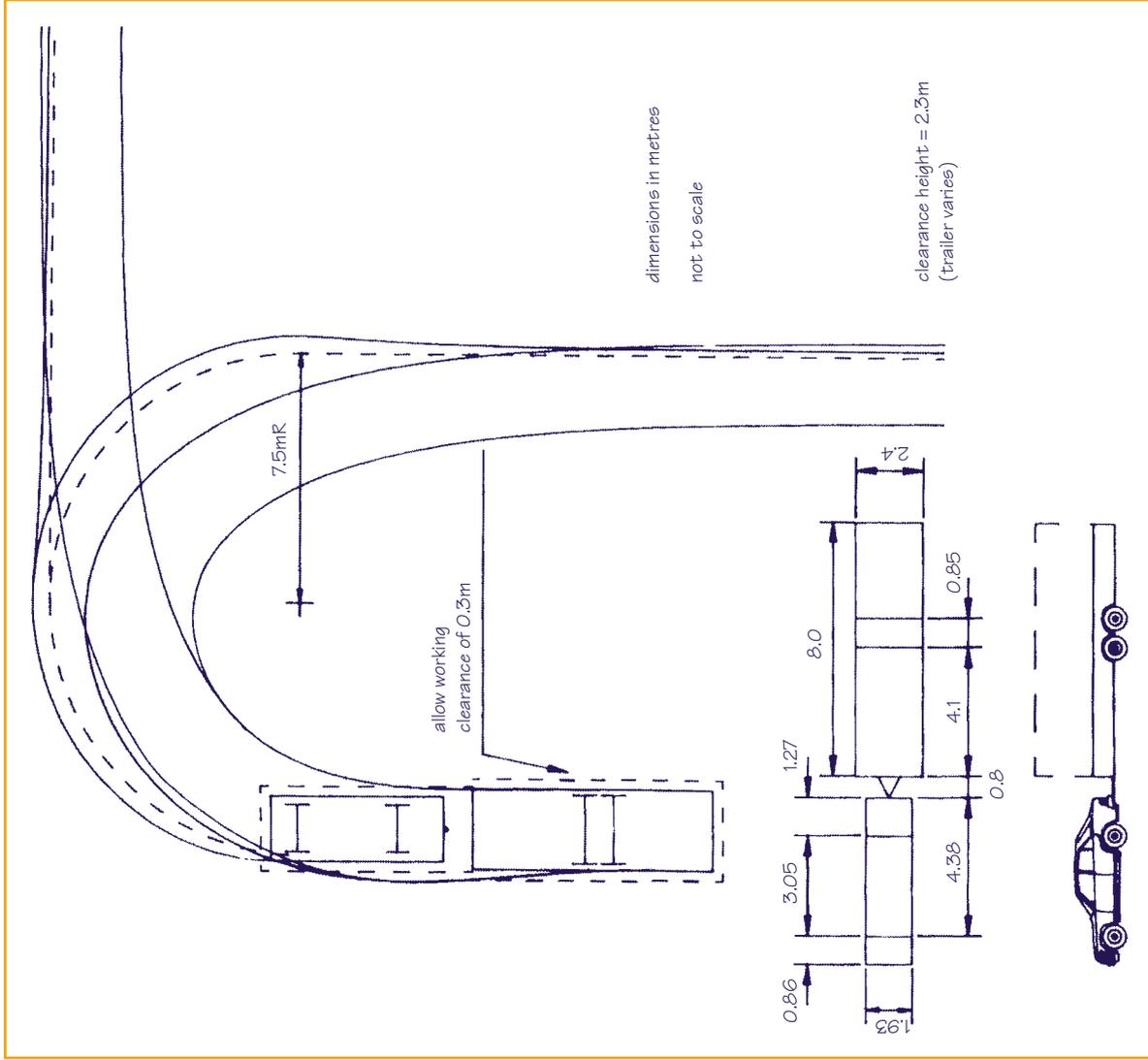


Figure af Manoeuvring template: car and trailer 7.5mR

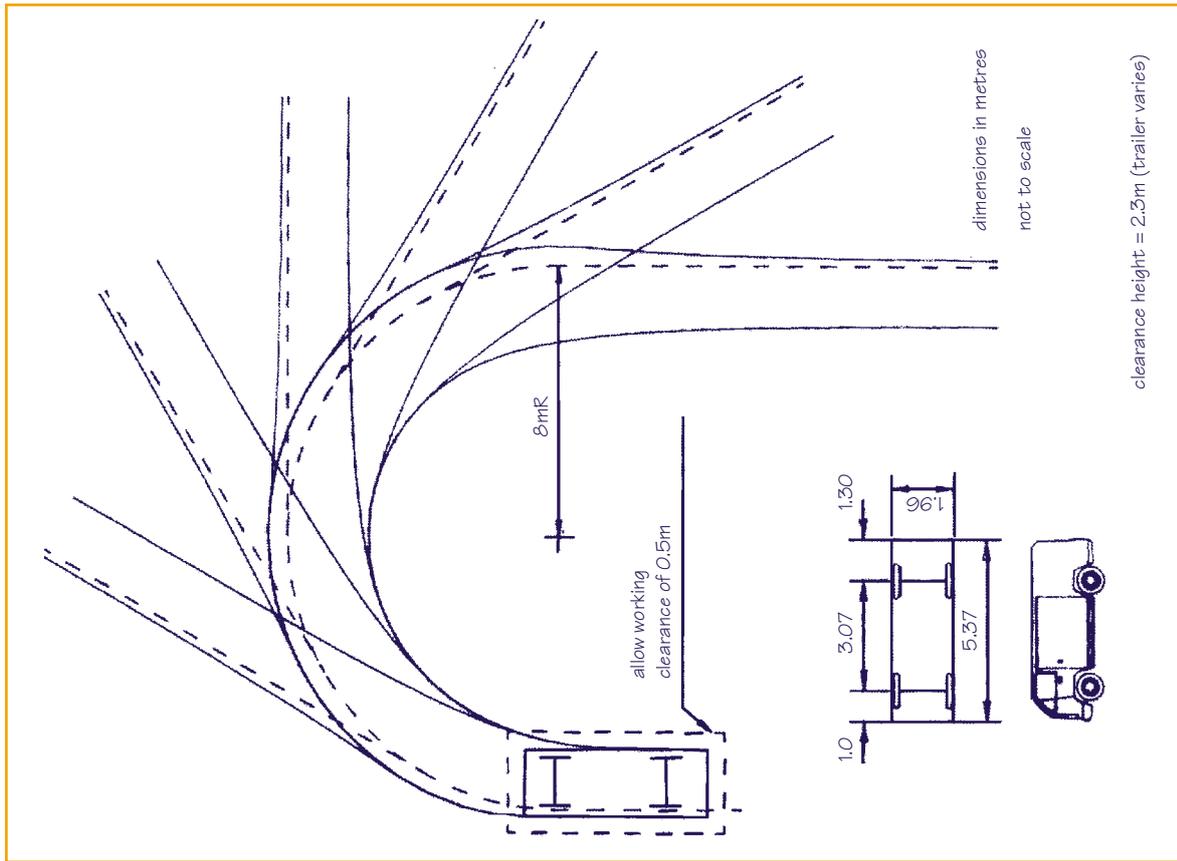


Figure ah Turning template: van 8mR

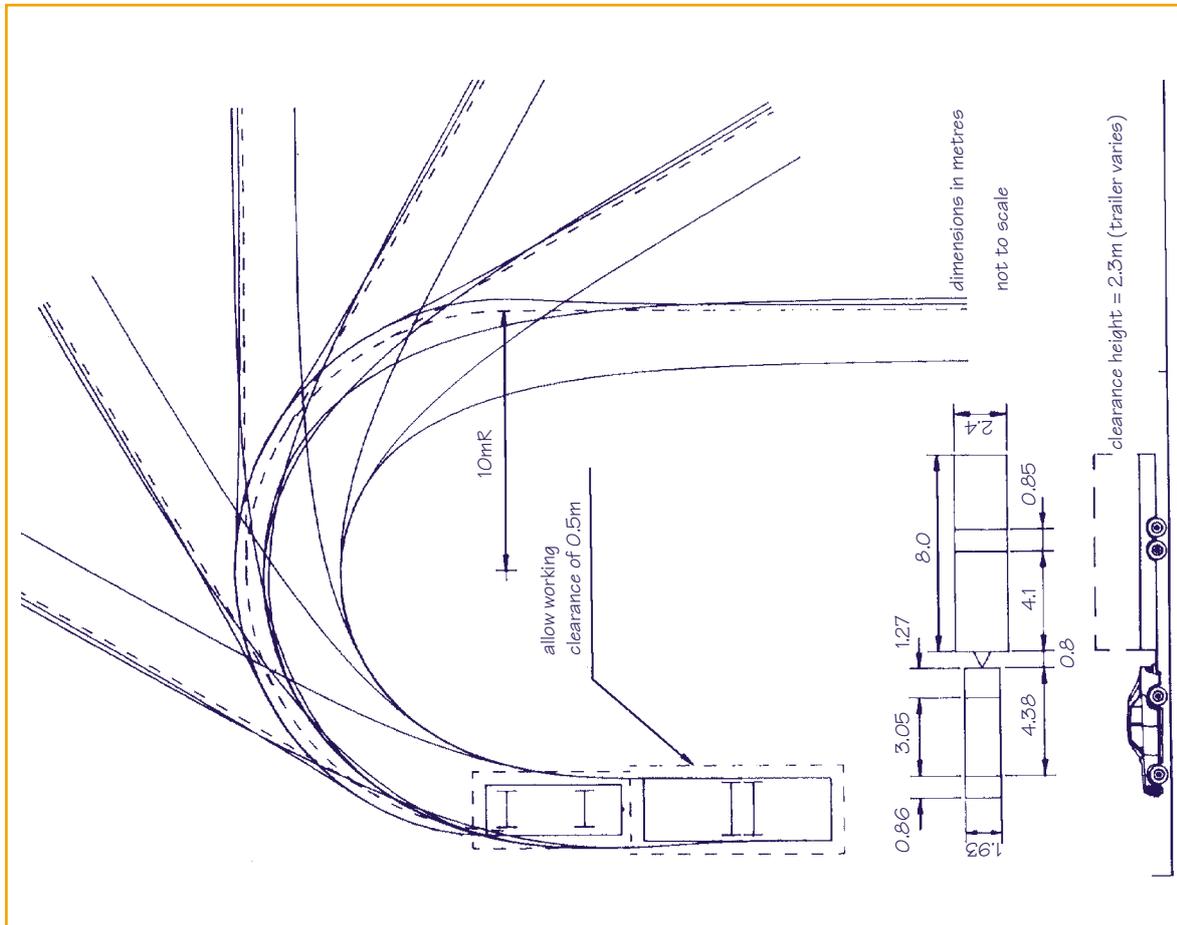


Figure ag Turning template: car and trailer 10mR

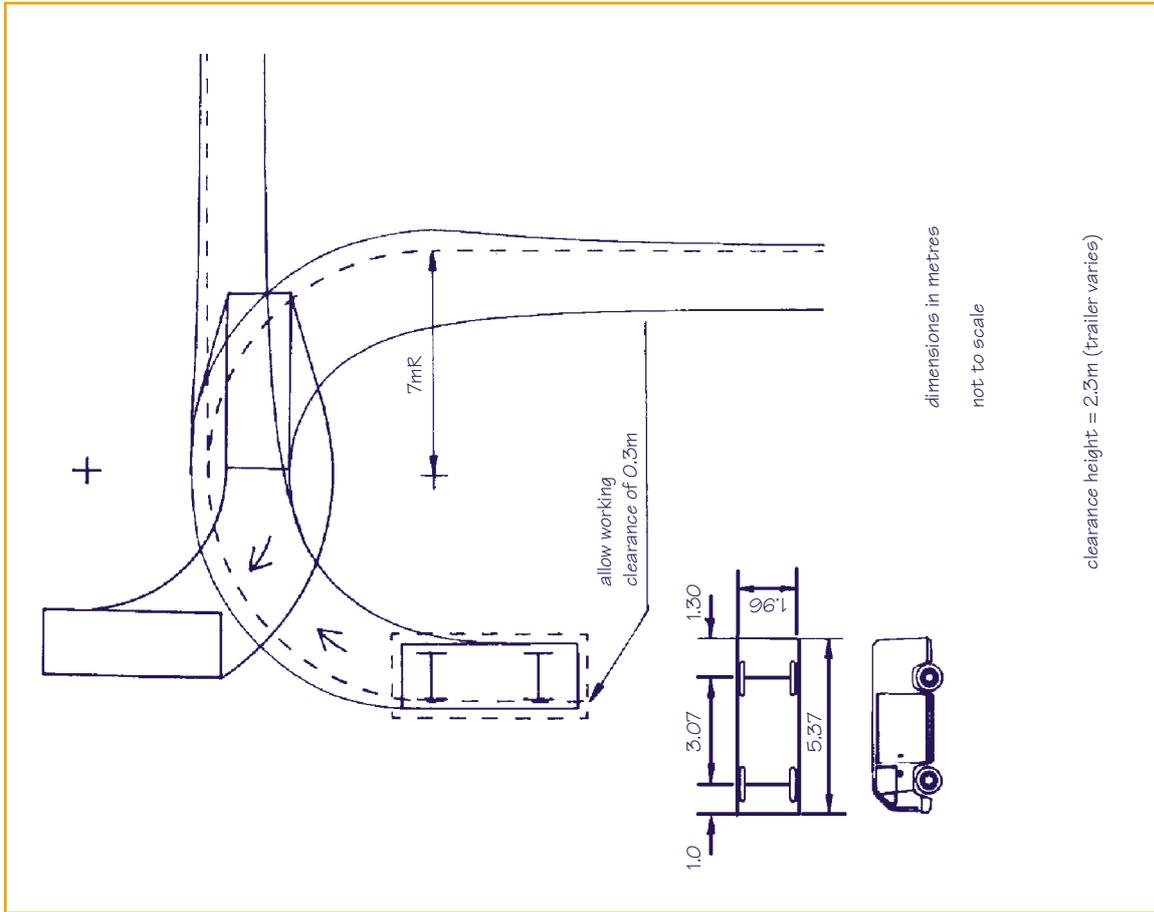


Figure ai Manoeuvring template: van 7mR

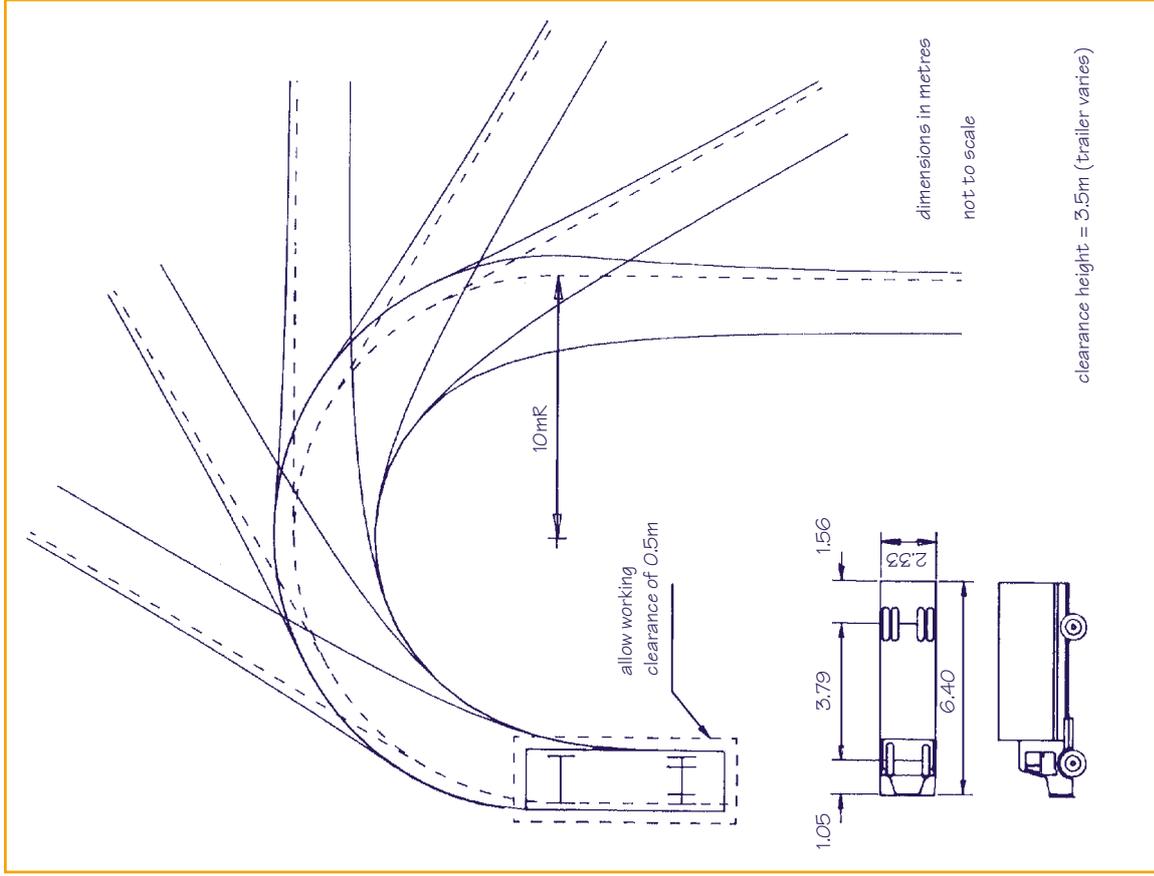


Figure aj Turning template: small rigid vehicle 10mR

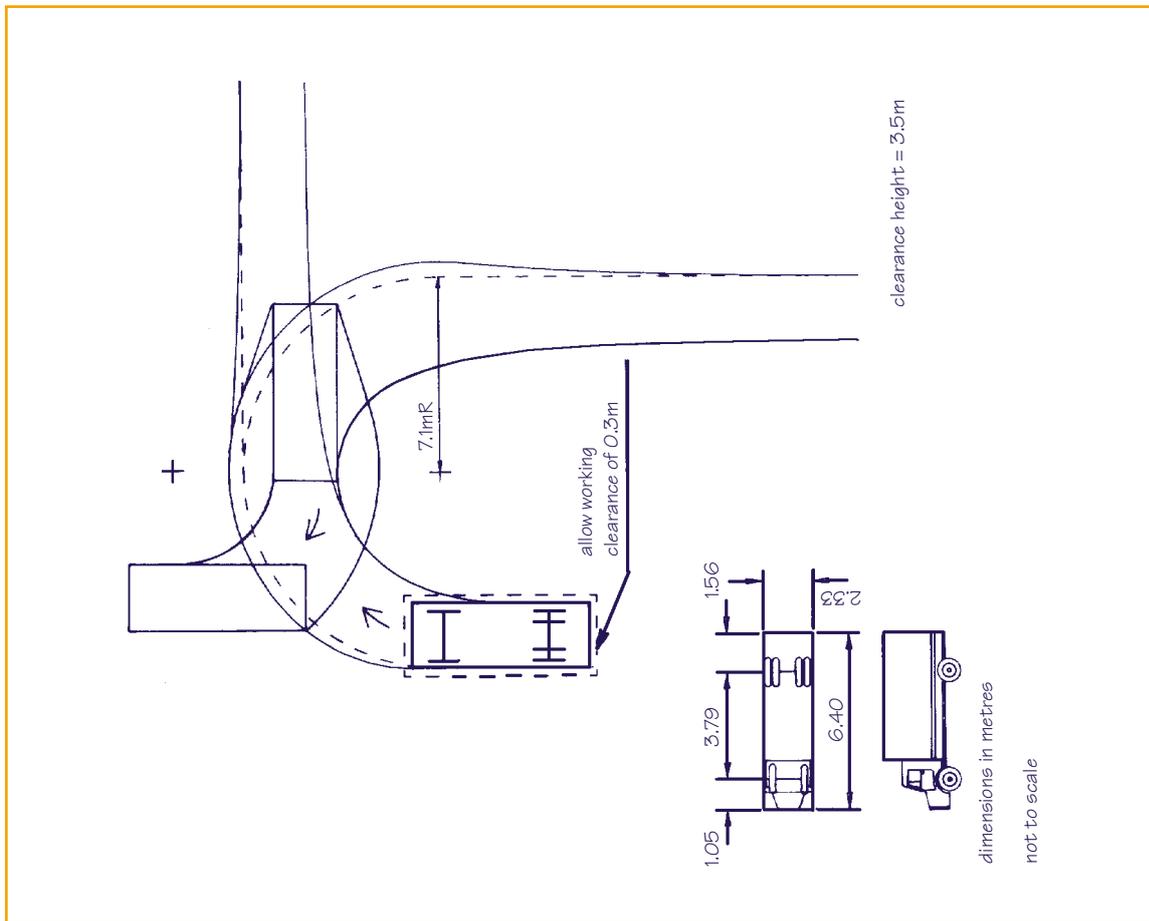


Figure ak Manoeuvring template: small rigid vehicle 7.1mR

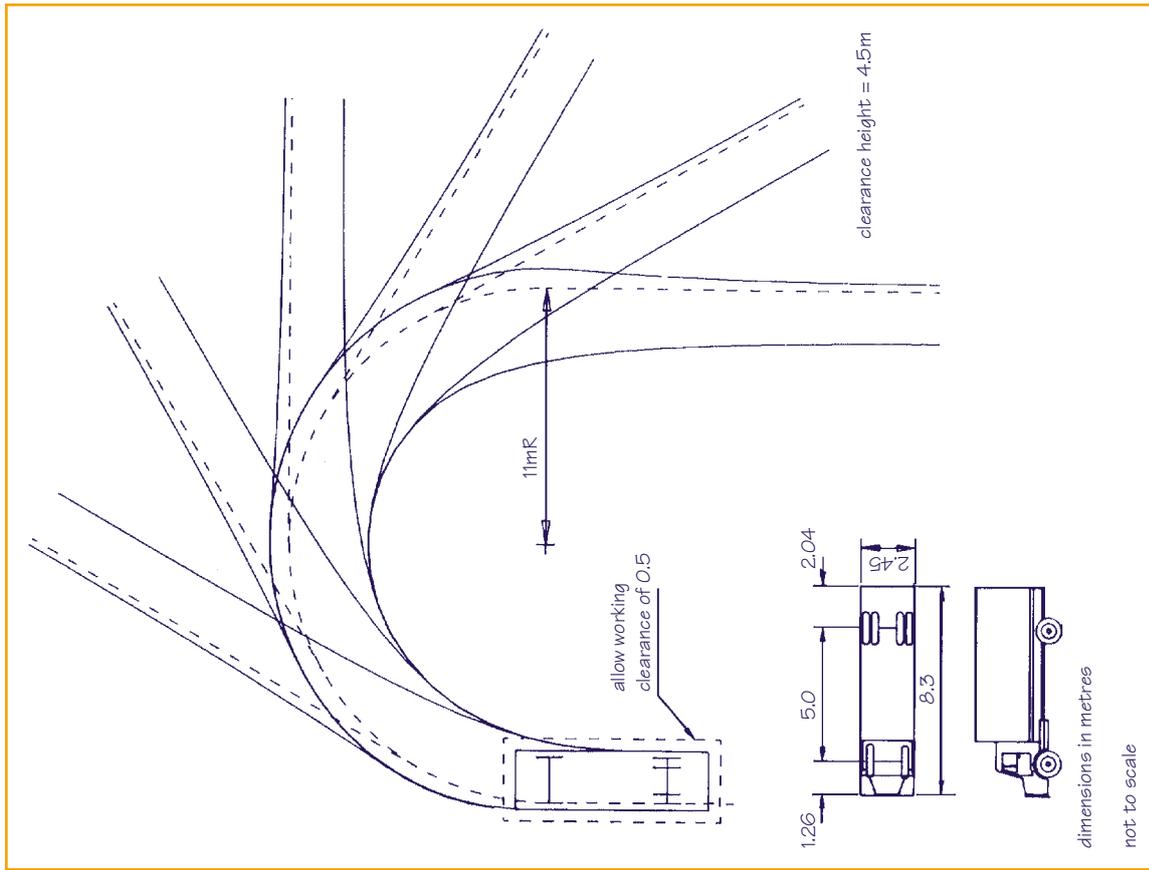


Figure al Turning template: medium rigid vehicle 11mR

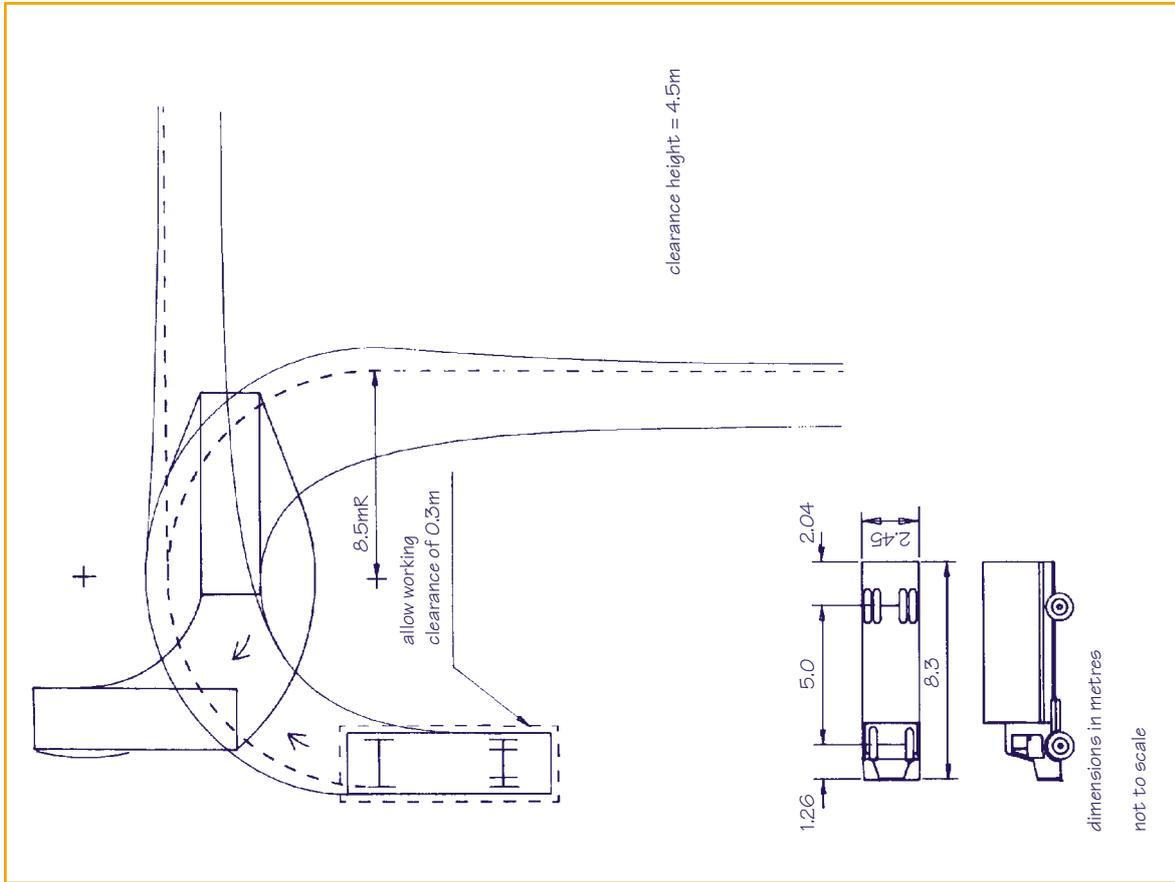


Figure am Manoeuvring template: medium rigid vehicle 8.5mR

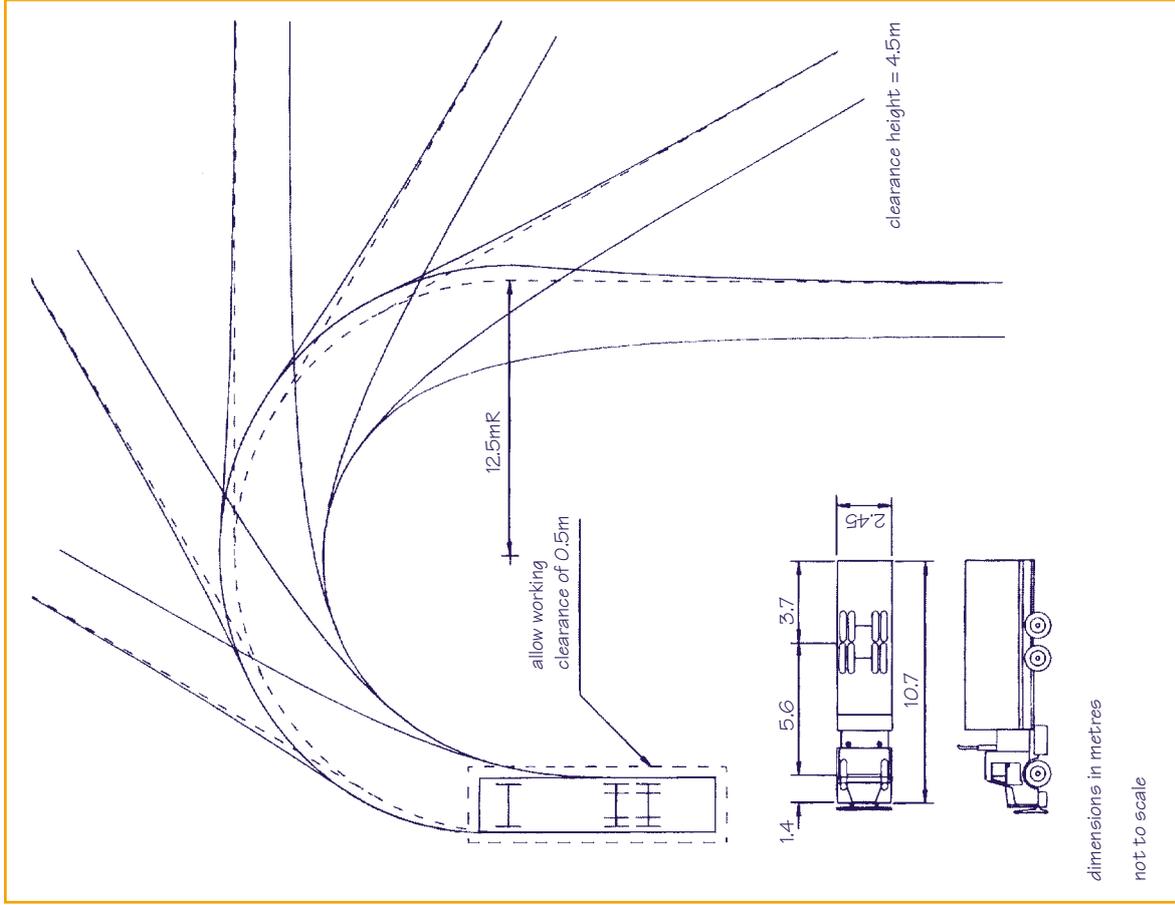


Figure an Turning template: large rigid vehicle 12.5mR

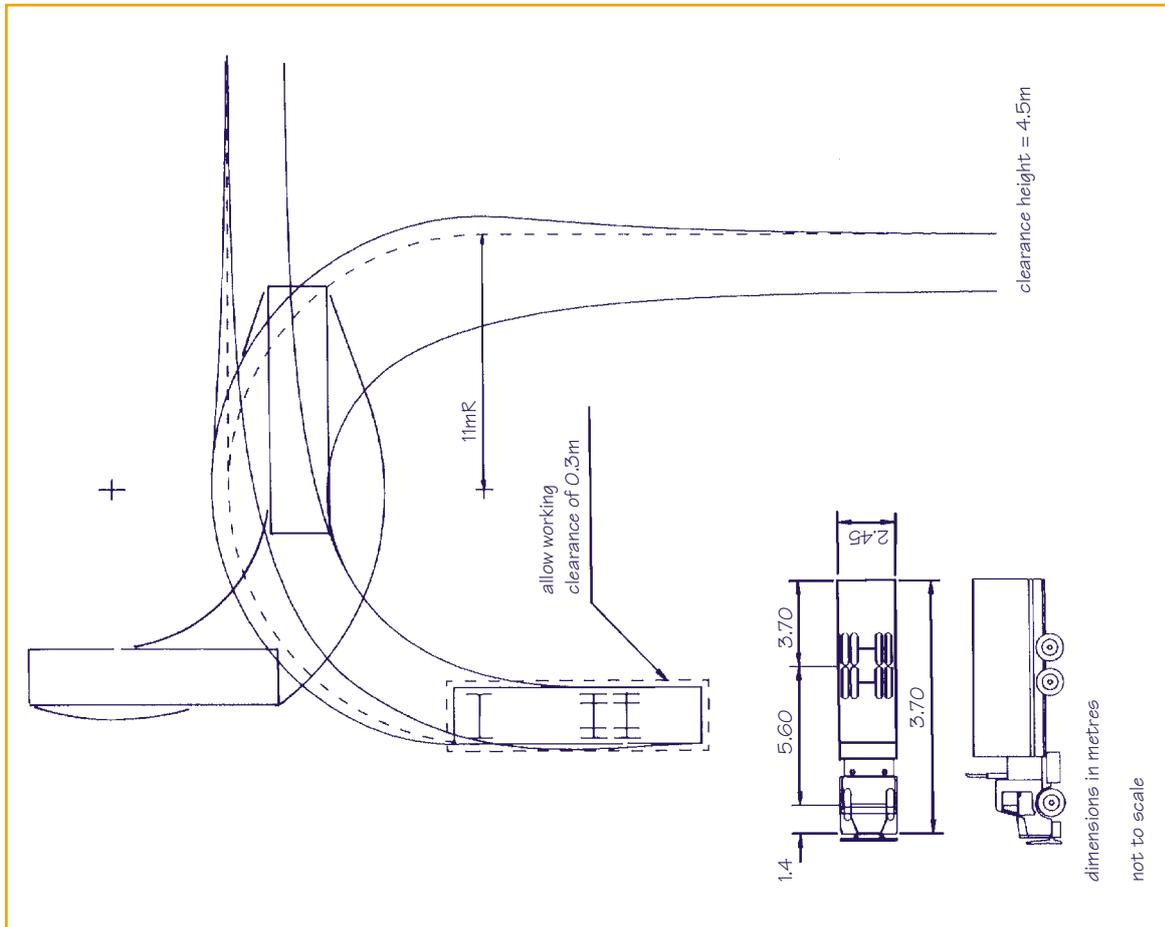


Figure a0 Manoeuvring template: large rigid vehicle 11mR

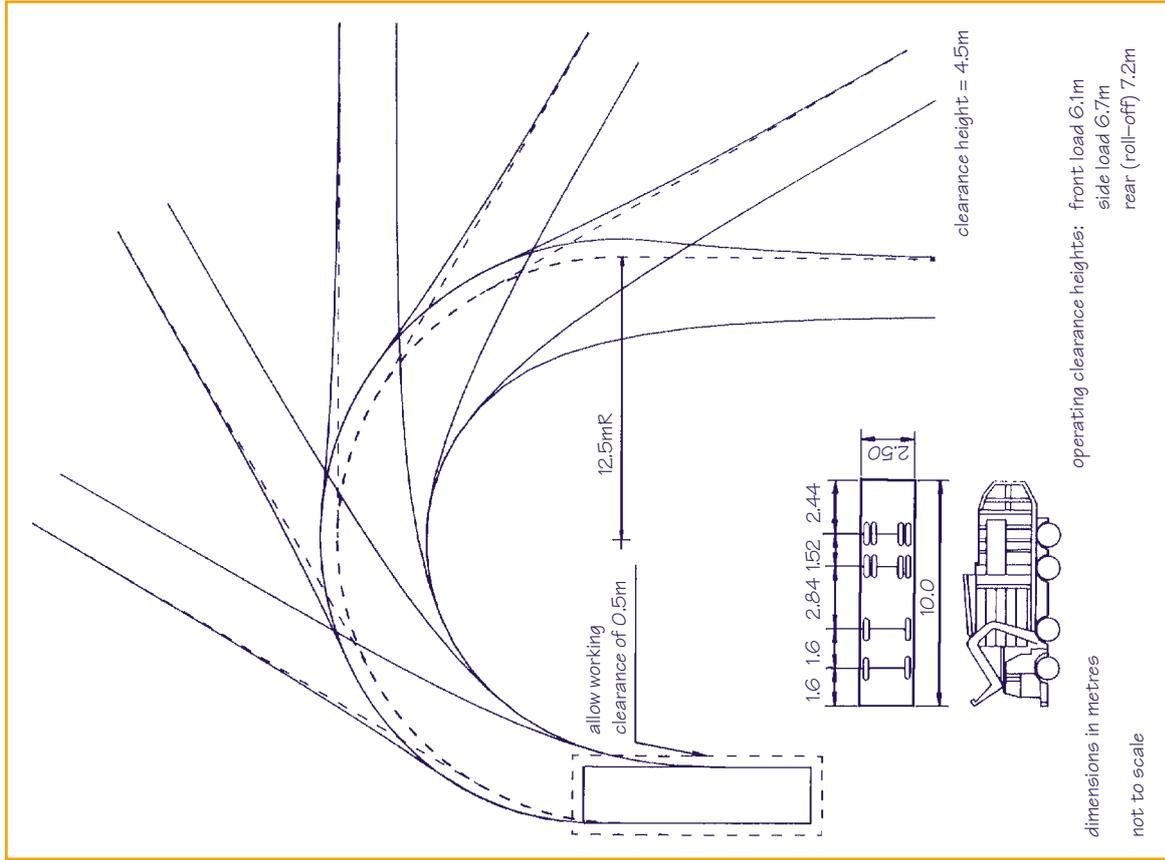


Figure a1 Turning template refuse vehicle 12.5mR

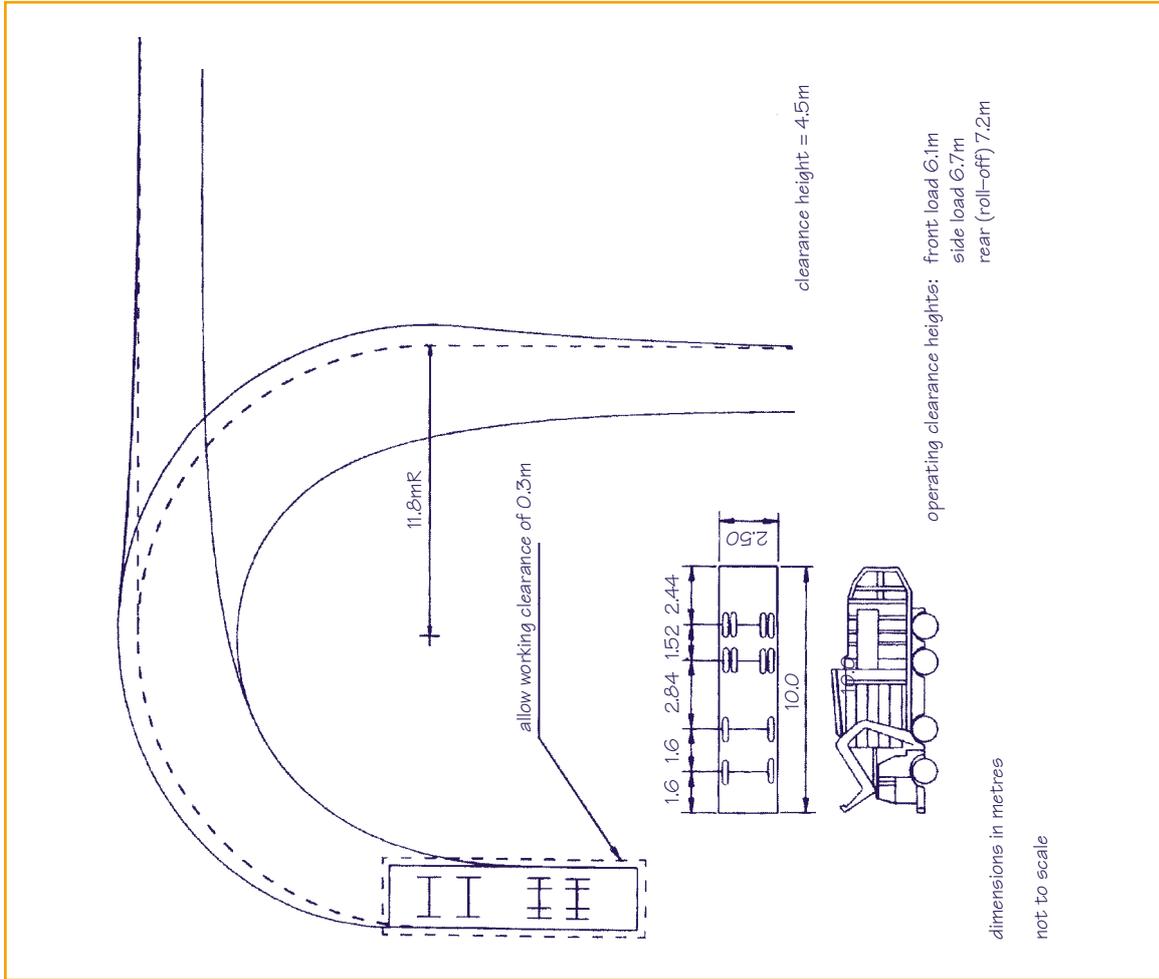


Figure aq Manoeuvring template: refuse collection vehicle 11.8mR

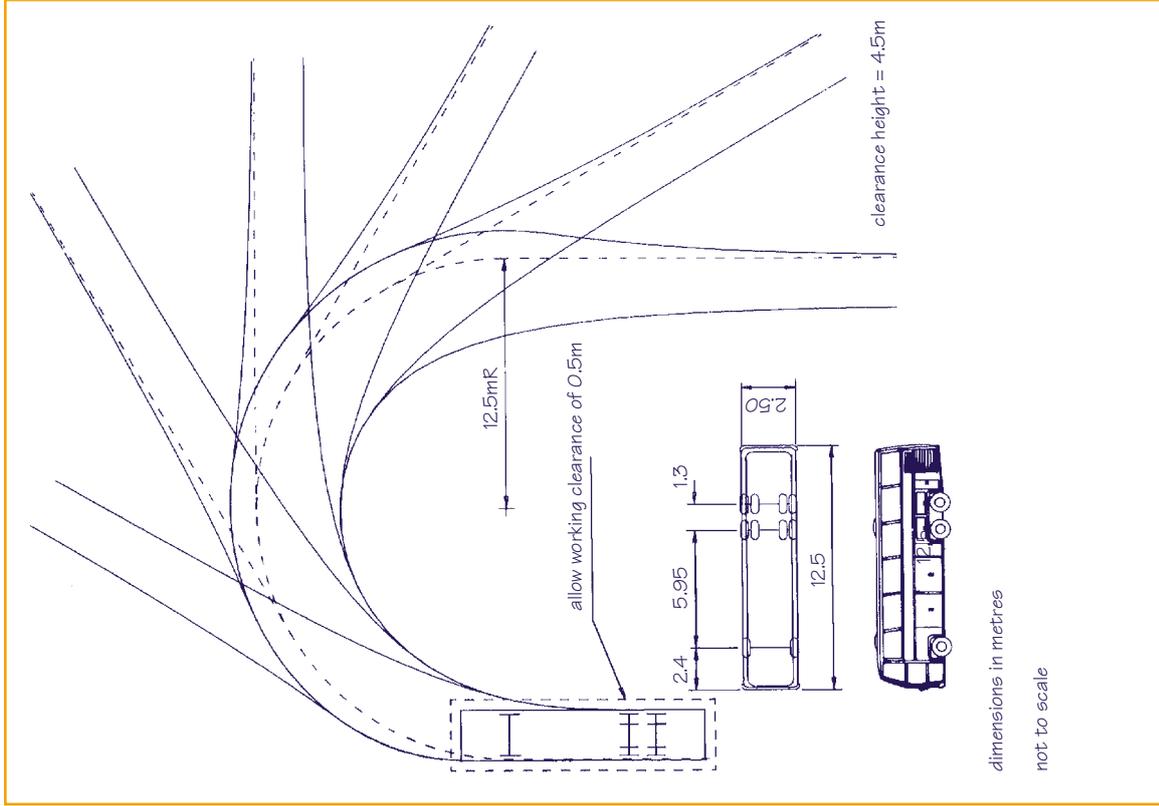


Figure ar Turning template coach (tourist bus) 12.5mR

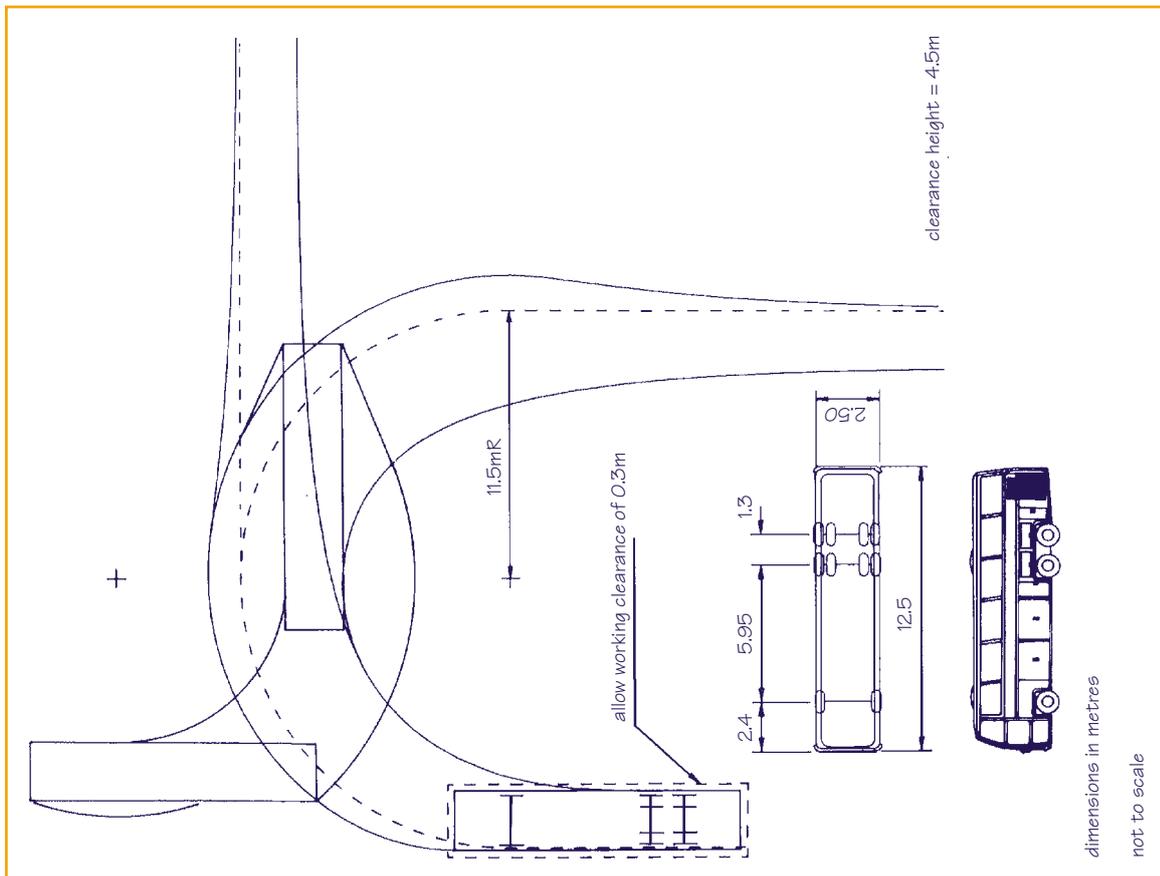


Figure as Manoeuvring template: coach (tourist bus) 11.5mR

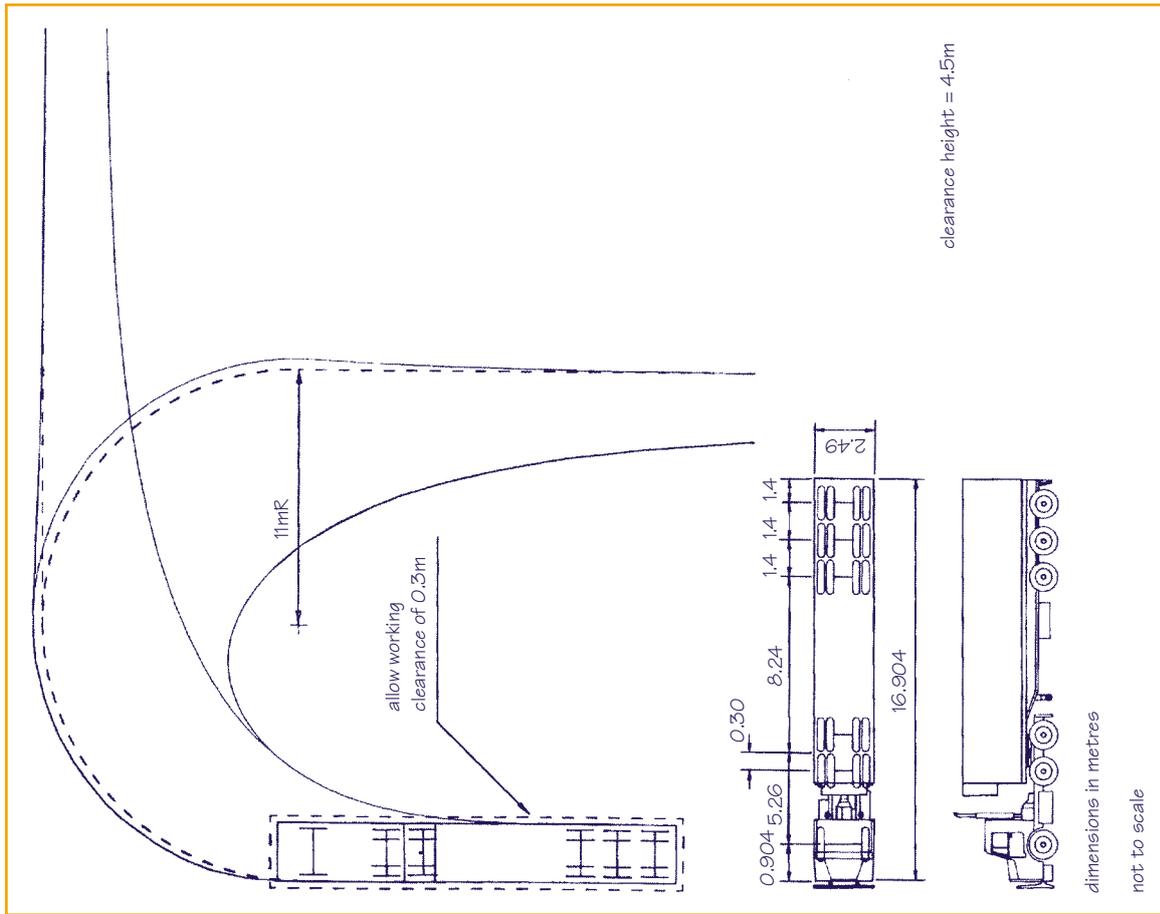


Figure at Manoeuvring template: articulated vehicle 11mR

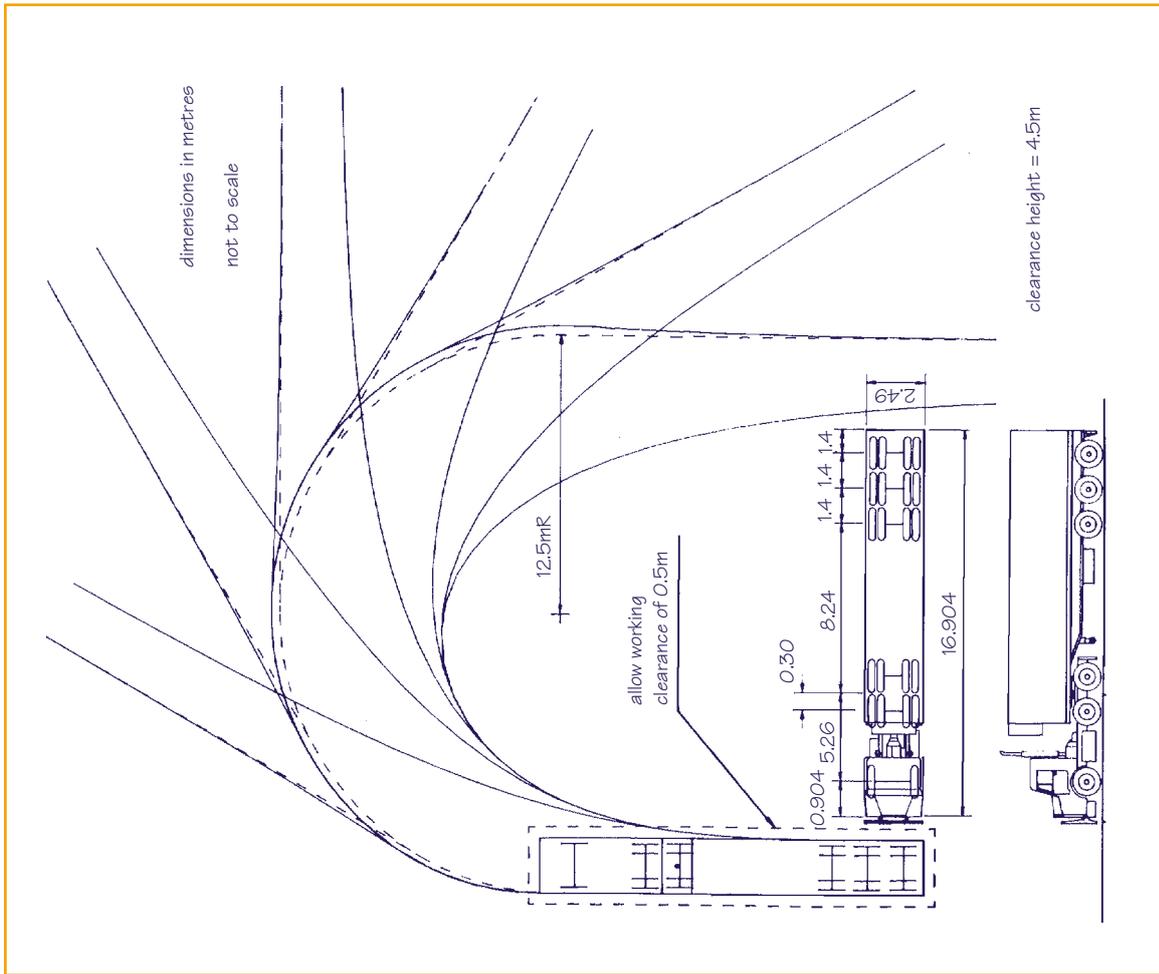


Figure au Turning template: articulated vehicle 12.5mR

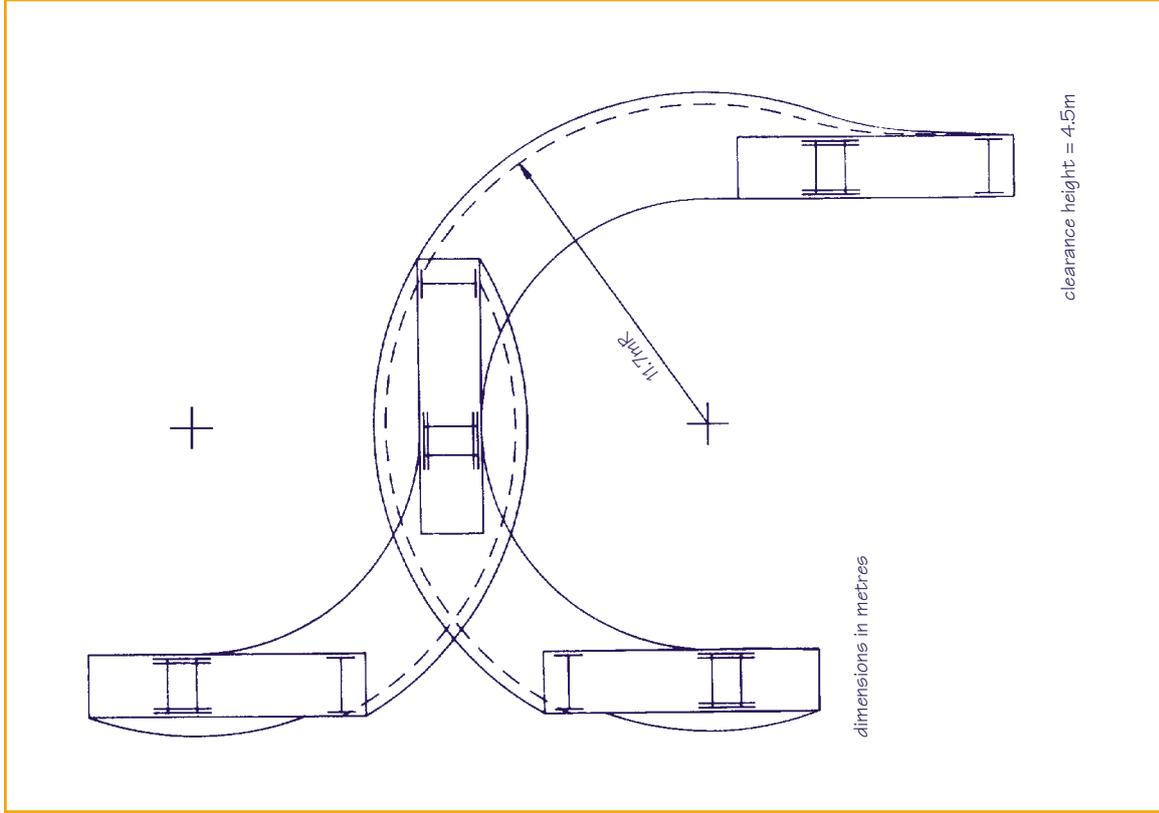


Figure av Manoeuvring template: domestic refuse collection vehicle 11.7mR